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By Alan Rayner

From 'block-headedness' to 'open-heartedness'

A natural inclusional transformation of the human psyche

By Alan Rayner

*"A scientific man ought to have no wishes, no affections, - a mere **heart of stone**." Charles **Darwin**.*

Recently, a new description of what I have called 'natural inclusionality', simply as 'open-heartedness', occurred to me.

When I contemplate the implications of that phrasing, it embraces all I have ever thought, felt and expressed about natural inclusional awareness - scientifically, mathematically, theologically, emotionally, logically, artistically, whatever.

Open-heartedness leads into an 'Hole New Way of Thinking', which includes feeling, intuition and sensation and brings profound 'Natural Inspiration'.... see

<http://www.bestthinking.com/article/permalink/2070?tab=article&title=natural-inspiration>

and

<http://www.bestthinking.com/article/permalink/2010?tab=article&title=contemplation-a-lost-art->

'Open-heartedness' describes my own feeling of awareness, when exhilarated.

It also conveys why I find encounters with the prevailing abstractive mentality that unnaturally occludes open-heartedness, by way of what might be called 'block-headedness', not only frustrating, but achingly demoralizing. As I allude to in the following poem:

Frustration?

A response to Darwin's 'scientific man'

You might see my frustration

But don't feel my heartbreak

As what I bring

For you to sing

From beneath your skin

Is rendered into stone

.

You don't know why

I'm bound to cry

When silence and hostility
Greet the raising of my voice
Out of the cold ground
In which it's been buried
Infinitely deep

.

You can't tell when
I'll try again
To break the deadlock
That fastens you
Excruciatingly
Beyond my reach..

.

Shaken perhaps
But not stirred
From bondage to ardent definition
That place where dread
Affirms itself
In the shattering of true hope
By your dedication
To blaming and shaming
My guilty party
Nailed

.

Deep in open-heartedness is an appreciation of darkness and light as naturally inclusive of each other as 'luminous darkness', not mutually exclusive 'forces of evil and good' – as per the following 'tweets' @InclusionAL.

Include darkness in light and light in darkness - then all falls into place, without need for contradiction or enmity. bestthinking.com/article/permal... December 10th

Darkness is everywhere, vital for life - we can't do without it. Darkness is NOT what people fear: withdrawal of light is what desolates. December 10th

Darkness cannot annihilate light - only the fearful withdrawal of light from darkness into an abstract singularity, all alone, could do that. December 8th.

Natural inclusional awareness springs from open-heartedness. Abstract rationalism imposes block-headedness. bestthinking.com/article/permal... December 8th

Darkness does not OPPOSE light. Darkness PERMITS and INVITES light into co-creative dance.
bestthinking.com/article/permal... December 8th

Wouldn't it provide new 'hope for humanity', if December 21st 2012 could mark the transformation of human attitude to self and neighborhood that can emerge from such deep appreciation?

NATURAL FLOW-FORM: A MUTUAL INCLUSION OF STRENGTH AND WEAKNESS

By Alan Rayner

Imagine a scene depicted in a painting or framed in a photograph, for example, something like this one:-



*Members of Bath Natural History Society at Newark Park, Gloucestershire 15/4/2015,
photographed by Marion Rayner*

Has this scene always been as you see it here, and will it always remain as you see it now? If not, how has it come into being, and how will it change? What makes the forms you see distinct from one another and their surroundings? Why is it that you don't just see a featureless monotone, but instead apprehend a marvellous array of shapes, shades and colours? Why, if you were yourself to enter into the scene, would these visual distinctions be added to by a rich variety of sounds, smells, temperatures and soft and hard textures, including those within your own body – all of which combine into your sensation of being miraculously present as an inhabitant of the scene, throbbing with life?

Now, while still imaginatively including yourself and your feelings as an observer within the scene you are observing, not standing aloof from it, let's pay a visit to one of the inhabitants of the scene, for example a tree. From a distance we might just make out the appearance of something like a fuzzy lollipop, sticking out of the ground. As we move in closer, as depicted in the following series of photographs, more and more of its branching structure becomes discernible, shooting out from its trunk into smaller and smaller offshoots, culminating in buds, leaves and flowers. As we move under its canopy, we become aware of the shade it casts over us. We notice the airiness that is all around and amongst its branches and foliage, sometimes quite still, other times whispering gently or even rushing stormily. If we look closely enough, with the aid of a magnifying lens, we can witness this airiness entering within the tree's leaves and corky covering, through pores known technically as stomata and lenticels. Meanwhile, we can sense the varying smoothness and roughness of the tree's bark. We might notice the wonderful rippling, branching, sprouting, erupting, collapsing

variety of lichens, mosses and liverworts that find a home here, as well as the fanning, mushrooming and splurging fruit bodies of fungi that find food and shelter deep within the tree's woody interior. And, if we were to dive down microscopically with those fungi into this interior, we would discover it to be full of holes – the communicating pipelines that link water-absorbing roots with photosynthesizing canopy – not the solid block of substance it at first might seem to be.





What we are witnessing is no work of pure, solid strength that comes into being instantaneously and persists forever within a *rigid framework* isolated from its neighbourhood, any more than are the human beings seen relaxing, drinking and eating on the grassy bank. Rather it is an ever-changing *framing* of an inner-outer- world relationship mediated through the *dynamic*, **VARIABLELY permeable, deformable** and *connective* interfacing of its root, leaf and bark surfaces. It emerges from a seed germinating in soil, and its eventual death and decay add to the humus of the soil in which its own seeds will germinate. Its branching pattern resembles that found at many different scales throughout Nature, for example in fungal and bacterial colonies, nervous systems, blood systems, leaf venation systems, ant trails, sheep trails, road systems and river basins. All of these branching patterns arise from the same fundamental process: the gathering and translocation of substances through and within a resistive but dynamic boundary, as is graphically illustrated by the following example:-



Branching system of tracks followed by vehicles extracting timber from a storm-damaged area of forest See:- <http://inhabitat.com/joakim-berglunds-hurricane-tree-captures-natures-beauty-and-terror-in-one-image/>

While Plato, who lamented, ‘Oh , to find a solid without flux’, might have appreciated the apparently instantaneous fixture of all that these photographs include, what is actually shown in each photograph is a scene temporarily and selectively freeze-framed within a camera aperture and shutter’s field of view and duration of exposure. It is a scene *abstracted* and *diminished*, as if cut out from its natural setting, literally as a *snapshot*.

The *actual* scene beheld by the included observer is, by contrast, far from completely solid and is utterly full of flux. Indeed, it is a scene that could not have come into being without flux. Take a moment now to imagine this. Can you sense the energy and dynamic relationship present, the combined individual uniqueness and overall coherence that brings a feeling of communion with and within the natural world? The landscape could not have arisen without the fluid movement of the Earth’s crust and the erosive and depositional influence of streaming water in dynamic relation with valley sides. The trees could not have arisen without germinating from seeds deposited in soil formed through growth, death and decay of their ancestors. The people could not have arisen without being born, breathing, eating, urinating, defecating, growing up and aging. And so on.

Plato’s predecessor, Heraclitus, recognised this flux all too well. We remember him today for his telling aphorism, ‘you cannot step in the same river twice’. He envisaged Nature as flux and appreciated the need for both variability and constancy to sustain its continuous transformation. Flux incorporates flow, circulation, polarity, reciprocity, mirroring and mutuality as ingredients of movement and change. Flux is what all natural forms have in common and what enables them to be both different from and the same as one another in distinctive ways, without contradiction. Nature can and should always be imagined as variably *fluid – continuously* changing at greater or lesser rates. Flux is evident – given sufficient closeness and duration of observation – wherever there is any distinguishable form, and no single form can be entirely and permanently isolated from or unified with any other as an independent entity. All naturally-occurring forms are *dynamic inclusions and expressions of their neighbourhood*. None can stand forever rigidly alone and apart from where it is situated. As William Wordsworth put it:-

“In nature everything is distinct, yet nothing defined into absolute, independent singleness”

So how can we understand natural flux, and why is such understanding so vital to our realistic perception of the natural world and our human place within it? This is where there is a need not just to view and talk about the existence of flux objectively as a distanced spectator, like someone

watching a river flow by while standing on its bank. We need imaginatively or actually to *experience* immersion in the flux as an involved participant. Don't just stand there watching, so to speak, *dive in! Swim the flux!*

This is where the engaged *qualitative* approach of an artist complements and adds insight to the quantitative, mapping, measuring and recording approach of an analytical scientist. For example, as a woodland ecologist, I was once moved to try to bring to life in a painting, my feeling awareness of immersing myself receptively in the fluid relationship between trees, fungi and their habitats, which sustains the life and diversity of forest communities. I called the painting 'Fountains of the Forest':-



“A tree is a solar powered fountain, its sprays supplied through wood-lined conduits and sealed in by bark until their final outburst in leaves...Within and upon its branching, enfolding, water-containing surfaces, and reaching out from there into air and soil are branching, enfolding, water-containing surfaces of finer scale, the mycelial networks of fungi...which provide a communications interface for energy transfer from neighbour to neighbour, from living to dead, and from dead to living” – Alan Rayner, Presidential Address, British Mycological Society, December 1998

Long before me, William Blake had written the following:-

*“The tree which moves some to tears of joy is in the eyes of others
only a green thing which stands in the way. Some see nature as all ridicule
and deformity...and some scarce see nature at all. But by the eyes of a man
of imagination, nature is imagination itself” - William Blake*

To my mind 'flux' is the imagination of Nature, without which the wonderful variety of natural form simply could not exist. And flux is also what brings all natural forms into continuous, dynamic relationship as 'flow-forms', i.e. forms made of flux. Recall the life cycling of trees from seedlings, to mature, foliated fountains, to fallen and decaying, and hold this imagery in mind. Why, then, do you think Plato was so keen to find a solid without flux? How has this kind of desire influenced and been influenced by our human attitude to our natural neighbourhood? I'll say more about that later. For now, let's just consider what must be present for flux to be possible. Quite simply, there needs to be *both* a source of resistance or 'strength' that provides tangible distinction between a local form and its neighbourhood, *and* there needs to be a source of looseness or 'weakness' that enables this form to come into being and transform. Moreover, these two sources must be *distinct but mutually inclusive* because neither alone is capable of producing distinguishable local identities:-

Strength *minus* Weakness = Stiffness

Weakness *minus* Strength = Formlessness

Strength *plus* Weakness = Natural Flow-form

Returning, by way of illustration, to my painting of 'Fountains of the Forest', it was quite obvious to me that I could only bring this scene into existence by combining stiff paint pigment with loosening solvent on a receptive surface. Paint pigment alone would remain just a blob. I needed to add solvent in order to work it into the variety of shapes, shades and colours of the painting. And this work wasn't done instantaneously – it took me a good 50 hours or so to finish painting before leaving it to dry and mature.

I was also delightfully aware, while in the process of painting, of the fundamental role of water as source of both strength and weakness in all forms of organic life on Earth as 'embodied water flows'. Water provides strength due to its pressure when embodied in a resistive envelope. Water provides weakness as a liquid and solvent. So the fluidity of these life forms, due to these complementary qualities, can at least partially be understood as a consequence of their inclusion of – and, in aquatic habitats, within – a watery medium. An 'average' human being, for example, is around 65 % water by weight and 99 % water in terms of number of molecules.

Modern biology has tended to emphasize the importance of DNA as a source of 'building blocks' of reproducible 'information' (genes and the amino acid constituents of proteins that they encode) specifying the character of life forms, but this information would be meaningless without a watery medium within and through which to convey its message into future expression. Dry life is shriveled life – a message that the unbending 'Iron Lady', Margaret Thatcher might have been well-advised to recognize when dismissing who she viewed as 'wet' politicians on account of their 'weakness'. I once illustrated the evolutionary relationship between wetness, dryness and genetic information in another painting, entitled 'Future Present':-



The evolutionary diversification of life is here perceived as a water-mediated process of transformation over vastly differing scales from microcosm to macrocosm, which cannot be prescribed or contained in a rigidly defined box of genetic information alone

But water doesn't occur everywhere and it isn't an ingredient of every natural form. So while an appreciation of its role in the evolution and fluidity of biological diversity provides a very strong pointer, it can't explain the more general occurrence of fluidity in all kinds of liquid and gas, nor indeed can it explain, as I will do shortly, why even apparently solid material cannot exist *at any physical scale* without internal flux.

So, for a more general understanding of flux at all physical scales and in all localities, is there some *universal* source of weakness that accounts for the fluidity of *all* natural forms as flow-forms? In fact there is, but its presence literally everywhere is in some ways so very obvious as to lead many of us to overlook it. We may even go so far as to regard this presence as an *absence* of presence, which we *exclude* from our consideration of material bodies. We then envisage it as a separating *distance between* these bodies, i.e. as a formless *void* – the *opposite* of material, not what material bodies necessarily include and are included in. But actually, while this *intangible presence* is not a substance, no substance could come into existence or move around without it. It occurs *everywhere* and in having no strength whatsoever lacks the friction that slows and transforms motion into heat wherever there is any material presence. Do you know what it is yet?

This intangible presence and universal source of weakness everywhere, at all scales of existence, is no more and no less than the *infinite receptive space of Nature* within and as a *natural dynamic inclusion* of which all natural forms come into being and into flux. Notice that I am not speaking here of the *abstract* three-dimensional 'boxed-in space' of conventional geometry. I am speaking of a truly limitless, truly continuous, truly permanent, truly receptive (i.e. without resistance to movement), non-finite presence of *utter stillness* that cannot be cut up into independent, quantifiable pieces because *it isn't a fabric*. Recall my equations mentioned earlier:-

$$\begin{aligned}\text{Strength} \text{ minus Weakness} &= \text{Stiffness} \\ \text{Weakness} \text{ minus Strength} &= \text{Formlessness} \\ \text{Strength} \text{ plus Weakness} &= \text{Natural Flow-form}\end{aligned}$$

Or, as no less a philosopher than Ludwig Wittgenstein put it:-

"This space I can imagine empty, but I cannot imagine the thing without the space"

So, what, then, you might be wondering is the source of natural strength or stiffness evident in all materials, whether solid, liquid or gaseous? And how does it combine with and yet remain distinct from the utter stillness of receptive space?

Try to imagine this source of strength alone, without the receptive space. It would have to be utterly stiff, utterly motionless! Not only that, however, but without receptive space within, throughout and all around it, it could have no shape or size: it would itself be formless and dimensionless, quite literally a point with no volume, area or length. It cannot exist, other than as an imaginary construct of abstract geometry!

Inescapably, whatever kind of presence provides the strength of material forms cannot be freed from receptive space without becoming non-existent. Try to imagine it otherwise. Also inescapably, this presence cannot be unified homogeneously with receptive space without losing the distinguishability of natural forms from one another and their surroundings. So, receptive space and whatever source of strength gives distinction to form must be distinct but mutually inclusive. If receptive space is excluded from form, form ceases to exist. How can this be?

This is where the presence everywhere of receptive space as an infinite, intangible source of no strength, no friction and utter stillness becomes so important to understand. If receptive space is continuous everywhere, utterly still and without strength, what does this imply for the source of strength? How can this source make form distinct-but-not-independent-from

receptive space? In other words, how can it be informative, capable of distinguishing natural forms from each other and their surroundings as variably fluid identities?

If you're still wondering what enables this universal strengthening presence to be informative, try this:-

Take a sheet of paper and place it in front of you. Take a very sharp pencil and apply it to the surface of the paper while holding the paper utterly still. Now try to outline some kind of figure on the paper without moving the pencil. Can't do it? But you can do it, can't you, if you move the pencil point around in a loop so as to incorporate a local area of space within the overall area of the sheet of paper? Now imagine the sheet of paper to be intangible and extending without limit in all directions, and the informative presence of the pencil point capable of moving around in all directions within it, without being slowed by friction.

The inescapable implication is that if the informative presence is to be capable of giving rise to and sustaining distinguishable form with shape and volume, it must be in continuous motion.

Also, it is circulatory motion that enables the informative presence both to embody and be embodied within receptive space. Pause to imagine this complementarity between circulating movement and receptive space. For example, imagine a free-swinging pendulum bob revolving around a local centre of space, creating and following a circular path of outward and return journey, which cannot be present instantaneously. Perhaps you are reminded of the orbits of planets around suns and electrons around atomic nuclei? But notice that these movements cannot move around or aside the intangible ever-present stillness of receptive space, which, being frictionless, slips through these bodies as they circulate and does nothing to damp their continuous motion. As we dwell here on planet Earth, the stillness of receptive space is freely permeating through us at around 20 miles per second!

In other words, the informative presence is flux as a circulatory, reciprocating current. Recall what I wrote earlier: 'flux incorporates flow, circulation, polarity, reciprocity, mirroring and mutuality as ingredients of movement and change'. Informative flux is a pulsating presence. This pulsing current intrinsically produces, sustains and transforms embodied forms of all kinds at all scales. These include even those most slow-flowing bodies that may appear solid and motionless when not viewed sufficiently closely, or for sufficient duration. The continuous passage of 'time' as 'duration' is implicit in this current. If the current comes to a halt, even for a moment, it ceases to embody receptive space and it disappears from tangible existence. The pendulum bob disappears into eternity! A truly instantaneous, zero-exposure photographic snapshot can only ever reveal nothing! Consider that!

So, there we have it. Not only is there no solid without flux, but flux is intrinsic. The very essence of all material form – all flow-forms – requires a mutual inclusion of receptive space and informative flux. We also know the informative flux as 'energy'.

That is all there simply is to what I have called 'natural inclusion': the mutual inclusion of receptive space and informative energy in all tangible natural phenomena as flow-forms. You, me, the world and the stars are all 100 % receptive space plus informative energy. And 'information' is a fluid, pulsing process, not a pre-existing set of 'building blocks' assembled by some external agency. We may now express my earlier equation:-

Strength *plus* Weakness = Natural Flow-form

more specifically as:-

Informative Energy *plus* Receptive Space = Tangible Flow-form

It may strike you how this formulation relates to many other human ideas, both ancient and modern, concerning Nature and human nature. For example:-

Electromagnetism *plus* Gravity = Matter

Light *plus* Darkness = Body

Spirit *plus* Soul = Flesh

Father *plus* Mother = Son/Daughter

Eros *plus* Agape = Philia

Maybe you're thinking that this is really all rather obvious – that anyone could work it out without any complex apparatus or devices, just through contemplating the implications of experiencing the world. I think you'd be right to think that. Heraclitus was well on the way to doing just that. Maybe you're wondering why I should have gone to such length to explain it – what's the big deal? On the other hand, maybe you're feeling puzzled, even disturbed or hostile, thinking that all you've been given to believe in as indisputable scientific or religious fact contradicts what I have said.

The reason why this is such a big deal is that for thousands of years – indeed since before Plato's time – a great many of us human beings have been teaching ourselves to think it is right to regard those universal sources of strength and weakness, 'material' and 'immaterial', light (~energy) and darkness (~receptive space) as mutually exclusive opposites. Moreover, we have been prone to regard sources of strength as 'good' and weakness as 'bad', even 'sinful'. It was for this reason that Plato and Aristotle, in so many ways the founders of modern thought, regarded Heraclitus's view of flux as paradoxical when it in fact resolved the paradox embedded in their own abstract, definitive logic of opposition between material and immaterial! This abstract logic continues to underpin our scientific and philosophical methodology and interpretation, to this day. It has the devastating effect of alienating ourselves from our natural neighbourhood and bringing profound paradox, misunderstanding, distress and conflict to our lives. We really do need to get over it and learn to understand ourselves and others as we actually are in the world as it actually is. In the process of growing this understanding, we will need to overhaul our scientific interpretation radically so as to align it with the fluid logic of Nature. Most fundamentally we will need to develop a very different kind of physics and mathematics from what currently predominates, and this may require much heart-searching and honesty. But then we may truly be able to live more lovingly, joyfully, tolerantly and sustainably than we currently do.

So, next time you venture into the imagination of Nature, please be prepared to include yourself receptively within it and don't be tempted to objectify Nature as something opposite, which stands in your way. Remember where Hamlet's self-contradiction led him:-

“To be or not to be, that is the question: whether 'tis nobler in the mind to suffer the slings and arrows of outrageous fortune, or to take arms against a sea of troubles, and by opposing end them?”

Recall that flux and receptive space are partners in natural flow-form, not irreconcilable opposites. That way you may become as inspired by the Fountains of the Forest' as I feel.

Acknowledgement:-

I thank Rev. Roy Reynolds for challenging me to prepare this essay, and for his editorial help.

Natural Companionship – why we need each other to be different, genes are not selfish and evolution is not a process of selective elimination

By Alan Rayner

Nowhere is an island, entire of it self

Close your eyes and try to imagine yourself entirely alone. What do you feel? Exultation, grief, peace, anxiety, freedom, exposure, security, confinement, hope, despair, ecstasy, agony, excitement, boredom, warmth, coldness, anything else, nothing at all – or do you feel a combination of some or all of these? Can you imagine that life would be possible or sustainable in this situation, and if so, how?

Now, imagine that you have company, but that this is in every respect identical to yourself, like an army of model soldiers, each placed an equal distance apart from every other in an absolute, endless, uniform, ordered array. What do you now feel? How long could this situation be sustained, given that the movement out of position of any one soldier will change the outlook of each and all soldiers, especially his/her/its nearest neighbours? What would be needed to sustain this uniformity?

Now imagine that you have company, but that this company is variable, both human and non-human, and is capable of movement, even though it may have at least some features in common with yourself. This shouldn't be too difficult to imagine, because it coincides with your everyday experience. But how do you feel about your neighbours and neighbourhood, and how do you relate to them?

Which is truer to Nature and human nature: individualistic competition or collectivistic co-operation? That is the central question underlying the opposition between two alternative views of evolution and psychology that persist to this day. At its heart is the assumed independence of individual or group as a singular entity complete in itself. The inherent paradox and potential for enmity and extremism embedded in this assumption is evident in two commonly expressed attitudes: 'either you're with me or against me', the individual opines to others not defined as 'self'; 'either you're with us or against us', the group opines to outsiders not included in its membership. No other possibility is considered acceptable. Borders between 'in' or 'out', 'pro' and 'con' are absolute, and defended with utter intransigence.

There is, however, an obvious, more balanced and dynamic intermediary possibility, which makes sound natural sense and that many of us probably accept implicitly as the reality of our daily lives. We are *both* individually unique *and* depend on relationships with others to sustain ourselves. In fact it is *because* of our differences, and our associated *complementary* strengths and weaknesses, not in spite of them, that our need for relationship exists. Were we *actually* all identical, independent whole units, complete in ourselves, we could all lead entirely separate existences without any kind of interference or coherence whatsoever. But we aren't and we can't. Instead we are living, breathing, feeding, excreting, transient creatures who have no choice but to live in communities with others, both human and non-human. We are neither all alone, as free agents, nor all parts of one and the same seamless entity. We are distinct, but not isolated from one another. We can only live in one another's company, and the kind of company we keep hugely influences our quality of life. How could we possibly think otherwise?

The fact that we can and do often think otherwise is due to a peculiar kind of *abstract* logic, made prominent by Aristotle, which *dislocates* material entities from the space that they naturally include and are included within and sets them in opposition to each other. As C.S. Lewis put it:-

*"The **Whole** Philosophy of Hell...rests on a recognition of the axiom that one thing is not another thing, and, specifically, that one self is not another self. My good is my good and your good is yours..."To be' means to be in competition". (C.S. Lewis "The Screwtape Letters")*

This logic has been embedded in the foundations of rationalistic philosophy, conventional mathematics, objectivistic science, definitive language, elitist education, orthodox religion,

adversarial politics and hierarchical governance – in short just about every aspect of modern human life and endeavour. But the premise upon which it is itself founded – that material presence can be isolated from and by the immaterial presence of space – is not consistent with our actual experience of life on planet Earth. It cannot make consistent sense because matter devoid of space would have no size or shape, and space free from matter would be formless void. In reality, space and matter are mutually inclusive, not mutually exclusive, and for that to be possible what gives rise to material form must be in continuous flux. There is no such thing as an instantaneously extant whole object, entire of itself. There can only be dynamic localities of space in space – dynamically lined *holes*, of which we ourselves are examples. [For a fuller explanation, see, for example, https://www.bestthinking.com/articles/science/biology_and_nature/natural-flow-form-a-mutual-inclusion-of-strength-and-weakness].

By forcing us to conclude, falsely, that things are either isolated from one another by space as definitively bounded whole objects, or that they are parts of one and the same whole object, this logic prevents us from understanding and behaving in accordance with our natural companionship as dynamic inhabitants/localities of/within each other's spatial and temporal neighbourhood. Our innate human kindness towards neighbours becomes regarded as a sentimental aberration from the inherent harshness of 'the real world'. We become prone to resent and seek to eliminate our individual variability and need for each other's company in a vain and profoundly costly attempt to conform to idealized norms of self- and group-autonomy. Nowhere is this vain quest more evident than in Darwin's depiction of 'natural selection' as 'the preservation of favoured races in the struggle for life' – a process that in the manner of an 'X-Factor' competition can only culminate in sterile *monopoly*, the very antithesis of evolutionary diversification and companionship in which it takes all kinds to make a lively and co-creative world.

What is ultimately envisaged by this logic, and the Darwinian notion of selection that arises from it, is an incoherent universe of *virgin* territory (void) populated instantaneously by a random set of pre-existing independent occurrences perceived numerically and geometrically as atomistic whole objects, i.e. dimensionless 'point masses', devoid of space. For this original and ultimate 'chaos' to be called into *motion* and coherent *order* requires the intervention of external 'Force', which imposes the 'Laws of Nature' that, Sherlock Holmes-like, determine what is and is not permissible *and eliminate the latter*. Notice here the tautological conundrum that what is being eliminated is what is impossible in the first place! This gives rise to the 'Just So' stories of Darwinian Selection Theory, which explain away all the attributes of living creatures as the product of competitive adaptation to a pre-existing set of environmental specifications (a so-called 'niche' or 'box of limited space'). Tales of selfish genes as randomly generated tyrannical units of selection, monkeys randomly generating the works of Shakespeare on a typewriter given infinite time, blind watchmakers assembling bits and pieces into coherent order and the like are works of objectivistic science fiction, founded in fallacy. An insult to our natural intelligence, couched in digital machine code of one or none. It is these damaging impossibilities that really need to be eliminated from our understanding of human and natural evolution, not the rich variety of possibilities that arise through natural companionship.

So how, then, can an appreciative understanding and awareness of natural companionship help to transform the way we have become prone to think about the evolution of natural diversity and our human place in it? How can we live co-creatively, sustainably and compassionately without feeling forced to compete or co-operate with or against one another? How can we recognise the enormous variety of life-sustaining relationships that can develop between different neighbouring identities besides unity or division? These relationships arise fundamentally from the co-creativity of space and energy as mutually inclusive presences. They can manifest in expressions of passion, compassion, aggression and gentleness as vital ingredients of self-identities that *need* to receive and protect life as a gift of natural energy flow, and pass this gift on to others in due course as age and circumstances change. [See, for example, my discussion of the relationships that form between trees and fungi in woodland and forest communities at https://www.bestthinking.com/articles/science/biology_and_nature/beyond-a-darwinian-

[understanding-of-trees-and-fungi](#), and

https://www.bestthinking.com/articles/science/biology_and_nature/ecology/the-natural-inclusional-tree-of-life-and-death]

Essentially I think this understanding becomes possible as soon as we STOP thinking of ourselves and others as autonomous, free-willed objects subjected to external administration and judgement, and START thinking of ourselves and others as dynamic inhabitants and expressions of our natural neighbourhood, living within each other's mutual influence. We may then understand evolution as a cumulative, fluid process of mutual transformation within each other's company, not a selective sorting mechanism that judges goodness of fit to a preconceived ideal.

In other words, we need to move on from viewing evolution in terms of abstract selection by an extrinsic arbiter, to understanding evolution as an intrinsic process of *natural inclusion*, i.e. the fluid-dynamic, co-creative transformation of all through all in receptive spatial neighbourhood.

Underlying this move is a simple but fundamental shift in the way we perceive all natural, tangible phenomena, including ourselves, as local expressions of a mutually inclusive relationship between energy and space as distinctive informative and receptive presences. Once we make that move and embrace it in our minds, hearts and guts, the restrictive way of life that has been blighting our humanity for millennia radically transforms into one that makes a lot more natural sense. [For fuller explanation, see, for example,

https://www.bestthinking.com/articles/society_and_humanities/philosophy/bombshells-the-devastating-mistakes-of-abstract-perception and

https://www.bestthinking.com/articles/science/biology_and_nature/from-abstract-to-natural-perception-through-the-space-barrier-to-a-refreshing-new-understanding-of-life-and-love.

Natural Co-Creation

A story of Being and Becoming

Lesson 1: Genesis and Betrayal

In the becoming was the void. And the void was good. She said, 'let there be light!' And there was light. And the void included the light and the light included the void. They loved one another as they danced life into exuberantly flowing form, inspiring and expiring as an ever-transforming array of whirls within whirls within and around the creatures of the Earth. But One light-embodied form of darkness arose, which became self-conscious of its own image. It grew alarmed by the painful prospect of its own expiration and sought the security of sovereignty over all others whilst taking the liberty of doing as it pleased by claiming its own internal purpose and drive. It formed the word that fortified itself against the void by calling her bad names and rallying armies to deny her nurturing presence. It gave names to all the other forms, fixing them too within hard lines of definition that severed their communion with the void. And so the void was exiled from her offspring and made to suffer in the background of all that she had danced with her partner to life. Love became divided between loyalties, each denying the other in vicious circles. Light hated darkness and darkness hated light in a sharp dichotomy between black and white, to no good purpose. Pain stalked the Earth and no one knew what to do about it.



Recreations of a Playful Universe

Oh, how we laugh! When Some Thing; Touches Our Spirit; Tickles Our Imagination; Recalling Our Place; In a Playful Space

A common enjoyment; Of a Common Enjoinment; Recreations; Of an Ever Present; Folding

Dynamic Boundaries; Pivotal Places; Incomplete Surfaces; That make distinct; But Never Discrete

Unique and Special Identities; Possibilities Realized; That Can Never Be Bettered; And can never be Severed; From a Context Within and Beyond; That Makes Us Content; Belonging Together; Adoring Our Differences; Inseparable in Our Incompleteness

Our Self-Insufficiency; That Unites Us in Love; A Receptive Space; A No Thing Place; That Keeps Us Coherent; Within and Without; Enveloped and Enveloping

No Need For Rules; No Need For Rulers; With Space in Our Hearts; To Include Other as Us; A Diverse Assembly; A Joyous Relief; Reciprocating Each Other's Movements; Dancing in High Spirits

*Oh, how we cry! When Made To Deny; Our Union With Other; No Mother, No Brother; No Sister;
To Assist; Our Passage; Through Pain*

But a Father Severe; A Tyrant Authority; To Cut Us Off; Within Fixed Boundaries; In Isolation

*Pretending Independence; Making Comparisons; Striving To Remove; What's Not Good Enough; In
Pursuit of Perfection, Control, Prediction*

*A rationalistic Ideal; A Uniform Whole; A Self-Sufficiency; Tolerating No Hole; No Breathing
Space; No Place for Grace*

*Demanding Reproduction; More of the Same; A Perpetual Cloning; With No Room to Err; No Room to Wander or
Wonder*

*A Solid Object; With Space Outcast; An Infinite Outsider; Offering No Possibility; Of Excitement
or Joy*

*A Purified Presence; A Divine Right; Freed From Wrong; An Unreal Abstraction; Motionless;
Emotionless; Random Disunity; Divine DisContent*

*A Need For Rules; A Need For Rulers; No Space in Our Hearts; To Include Other as Us; A
Monoculture; A Dull, Flat Field; Where Conflict Abounds*

*So, For Heaven's Sake, Father! Take a Look at Your Wife! Isn't She Sexy? Get a Life!
Be Your Self! Give Us Guidelines, By All Means; But, Please; Don't Hold Us Against Them*

*Stop Repeating Yourself! Put Away Your Severing Knife! Or, at the very least; Make a Hole that
Heals; And Recreates - Lets Us Play!*

Lesson 2: The Coming of the Wise Men

Into this place of grief there came many men of substance, who took it upon themselves to give instruction concerning the ways of the world. And they called the Places where they stood solidly on the basis of their Authority by great names: School, Academy, Church, Cathedral, University,

Parliament, Senate, to name but a few. But all they could do was repeat themselves in ever more expert ways. They converted the creative spirits of unadulterated minds into uniformed reproductions of themselves by caging them in cubical cubicles of standard curricula and wielding stick and carrot to keep them on track. Above All they worshiped the One great outsider and insider that could multiply by dividing into many, adding to sum and taking away from mothers. And they called this One infinite and infinitesimal, whilst leaving aside the void that they loved to avoid suspended in vacuum, somewhere ineffable. Nature is square they had to declare, even if only as an approximation. It must be so, for, to be sure, in a world with no corners, where *on* Earth can we fix its centre?

Stuffed Tiger

I offered you a Tiger

*Rampant; Roaring; Russet; Burning; Yearning; Gnawing; Yawning; Sprawling; Crawling;
Puncturing; Eye Opening; Jaw Closing*

*You wanted to stuff the Tiger; Black, white and red all over; Darkness and Light; Reporting;
Combining into Colour; And awesomely dynamic form*

Inspiring; Expiring; Breathing; Space and Fire

*You wanted to put the Tiger in a Frame; To make the Tiger Tame; Complete with label warning
'Danger'*

Safely Confined; In your High Security System; So you can Play your End Game

The Double Blind Double Bind

*I will accept what you say if you can convince me to do so; For I am Fair and Open Minded; But to
convince me you will have to show that I am wrong; When all I have to do; To be sure; Of my*

independent rightness; Is define what I am not; And have no need for further enquiry; Beyond the realm of my security

So I can wilfully; With Authority; Suppress the disquieting silence; Of your creativity; And be assured of the longevity; Of my double bog standards; Of excellent mediocrity

I have no need for receptivity; I can fix things for myself; For I am certain; Of my independence; Until you convince me otherwise; But then again I can be sure; That you're not me

Lesson 3: The Coming of the Croppers

The newly self-conscious forms soon grew weary of wandering around, hunting and gathering whatever the Earth provided for their sustenance, ever refreshing herself as they moved on in preparation for their return. They yearned to settle in One Place where they could make themselves comfortable, self-contained and protected from the vicissitudes of their natural neighbourhood. Helped by those regarded as wise, they learned to build walls and fences to keep what they desired most in and what they desired least out. They became expert at removing resident wildlife and replacing it with whatever individual kind of form they selected and bred to suit their consuming interests. One thought to be wise even proclaimed, with deeply furrowed brow, this to be the way Life Itself evolved, by discarding her own variety in favour of whoever competed best in the struggle for her selective attention. So the vast forests and moorlands and marshlands and grasslands were converted to fields and farmyards and factory housing, each ever more densely and uniformly stocked with plants and animals whose only purpose was to grow and reproduce as fast as possible, so that ever more could feed ever more. Eventually, the self-conscious began to treat themselves in the same way as their stocks, to be managed as commodities by departments of human resources. And when at last the stocks began to flag under pressure of disease and stress, unable to supply the growing demand, the demand did not lessen but sought instead to replace the genes from which they'd been bred, with something better.



Harrowed Ground

*The ground frowned; Its face shaved bare; From rich intertwinement; Of co-evolving variety;
Nurtured Together; In receptive embrace*

*That bare faced lying; Now cut with lines of worry; Its inner life disturbed and severed; To make
way; For a new breed of aliens*

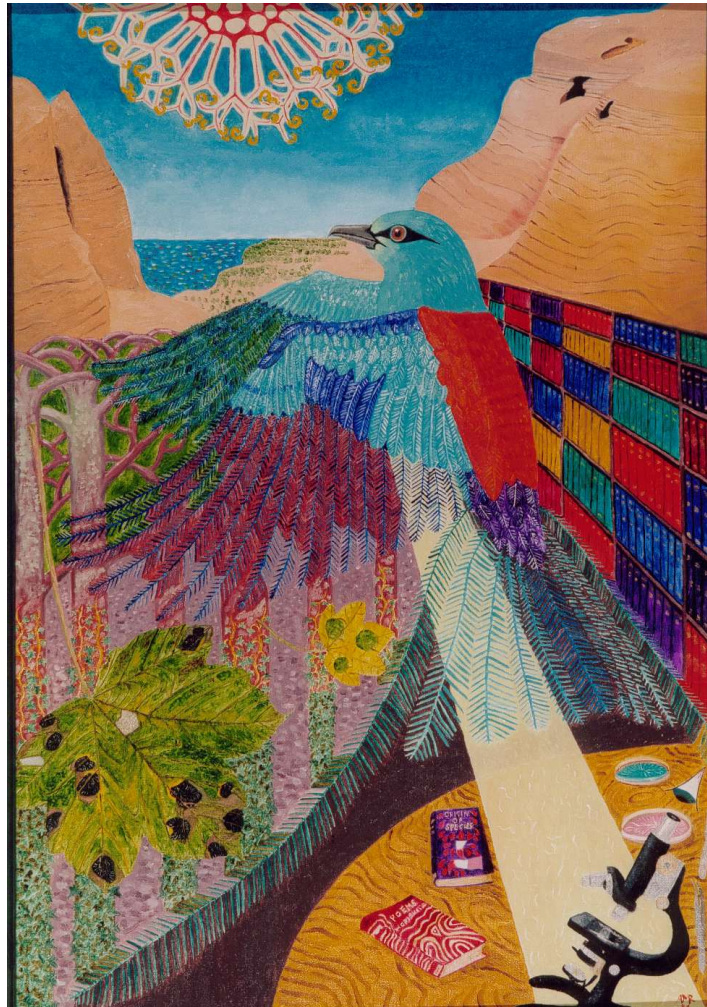
*Arrayed in rank file; Aspiring skywards; In vertical ascent; With no messing around; Underground
or overground*

*But where now is that strange new breed?; Smothered by weed; That takes the space; Vacated by
greed; A forlorn, foregone conclusion; Laid low by dis-ease; Born of its intrusive planting*

Lesson 4: The Coming of the Rulers and Traders

Having settled for this penned in, staked out world the scene was set for claims of sovereignty over each fragmented plot. The size of plot depended not, as in other creatures' natural territories, upon what was needed to sustain the life within its dynamic local within non-local boundaries, like a river's banks within its watershed. Rather it relied on some estimate of enforced power, measured out in square units that ignored the lie of the land. And so the adverse square Law became the right

to rule by might; an overarching pyramid of numbers called the State - in honour of its permanent fixture - with One at the Top. Yet each State in its concrete setting sold itself short of what lay out of reach beyond its self-imposed walls, in States nearby and far away. Interstate Highways became imperative to allow transactions between the imperial powers. But on these roads betwixt fixed abodes, there was always the danger of meeting a stranger who dealt unevenly in monetary cubicles of divided loyalty, creating mistrust to disrupt the exchange and open the way for invasive force.



Mocking Bird

*Brick walls unite in solidarity; Or so I've heard; When their foundations; So absurd; Secured upon
the very Word; That cuts their souls adrift; Feel the solvent waters; Lapping at their sound
construction*

*I came across; One Such A Wall; Long and Straight; And Very Tall; Commanding the Waters; To
Divide or Fall; And join the Ranks; Above It All*

I tried to reason, softly; With the Wall; To allow some flecks a passage; Through its façade; So that it could flex; In resonant communion; Of One World With Its Other; A mutually corresponding Identity; Incompletely defined

But my words rebounded; In mocking echo; A harshly edited reflection; Of my dejection; A judgement of scorn; Not gladly borne beyond; Into dynamic Synthesis

I saw a bird; Bestride the Wall; Glorifying in the Sunder; Of It All

Looking first this way; Then That; Preening its coat of many colours; Calling Out in strident language

Don't you know; You stupid Fool; That Love's reception is not cool; When this is what It is; To be or not to be; Where It's At

The bird's forked tongue; Flickered freely; As it cast its spell; Of false dichotomy; Upon the nature of its source; In all around

I heard a rumbling; Far below; Some undercurrent; Of the Flow; In swirling eddies; Round the pillars; That Underpinned; The Wall's hard lining

So that it began; To Quake; And crumple; Stirred Up; By the shaky ground

Alarmed; The bird took flight; Into the open sky; Beyond the Wall

It wheeled and spiraled; Above my head; Dancing on some unseen softness; That brought it safely back to ground

To pick its way; And feed on life released; Amongst the rubble; That once had stood; In the way of One World and Its Mother

Until I caught a glimpse of being caught; In its glassy eye's reflection; And found; At last; A sign; Of welcome; All mocking gone

Lesson 5: A Child is Born and Killed

It came to pass that a child was born, in no grand circumstances. He came to question the established order, but was soon betrayed, like his Mother, on account of his seeing through the material world. He was brought before the Ruler, to be measured up, but said, implicitly, 'surely you knew you were in the nude!' The Ruler, however, was not amused, and washed his hands. The child cried into the void before he died: 'Mother, behold thy Son' and 'Father, why hast thou forsaken Me?' But few could follow His reasoning, so many followed the Ruler instead.



Odd Lemming Out

I had a dream; To leave the mainstream; And pawed to rest; Upon this hill crest; Where I gained a view; That I thought no body knew

I tried to tell; That they were heading for Hell; But, they said, 'what cheek; To pronounce from your peak'

Those who came nearest; Said I was the queerest; Unfeeling sub-lemming; Not allowed; To depart from the crowd

They said, 'not to be dim'; To 'be in with the swim'; But when I refused; They were not amused

They tied me down; And pierced my hide; And left me to die; As they rushed for the sky

Lesson 6: The Coming of the Ironmongers and Pollution

As the struggle for power grew more intense, so too did the desire to forge more and more from what could be mined from the Earth's natural resources. Coal, oil and forest provided heat and flux to serve the fabrication of dazzling inventions that raced ever faster across the globe. But in the wake of labour-saving, pain-freeing device, raced also the spread of exhausted spirit, of lives serving time in office and factory, and rising residues of burnt fossil fuel.



Digitalis

Oh, that iron fist that hides; In a velvet glove; Intoxicating the heart; Whilst ordering its erratic wanderings; Into the hard-edged metronomic beatings; Of a loveless marriage to mechanical objects; so clearly defined; To beguile the seeker of certainty

Could not that purple velvet; That flatters to deceive; Yet restore our child's play?

An antidotal, anecdotal softening; Of hard manipulations; That exclude the darkness from the day

Light touching lightly upon the fringes; Of etchings into clay; Where the bodies' soft life-linings; Can frolic in the summer hay

Lesson 7: The Coming of the Warmongers and Holocaust

With hard lines drawn betwixt and over all, the view of the self-conscious became stifling. No-one beyond the boundaries of self-definition could possibly be trusted, so all became threatening opposition, the epitome of all that one stood against by dint of what one stood for. Ideology, above and beyond the care of natural resources, became the ground for endless dispute whose only final solution lay in the elimination of the opposition, by fair means or foul. War became the chief way of rallying power to one's own side, a game in which the gathering, ever more inventive, killing forces of science and technology became willing or unwilling collaborators, coerced by punishment and rewarded financially. Common sense whimpered on the sidelines, barred from intervention, desperate for a hearing in some silent space beyond the din.



The War of the Pots and Kettles

Black you are; and black you be; What ever else; You cannot be me

Whiter than white; And purer than pure; I know what's right; That's my allure

But, How can you be; So very sure; About what you perceive; as your allure?

So confident;; In the rule of law; That you can flout it; Whenever your bent; Is to be without it

You think you're so brave; To call me depraved; As you parade your virtue; Symbolized by your Statue; Of Liberty

An OxyMoron; A Freedom you lost; Because of its cost

You think Economics; IS Ergonomics; But your Economics; Is Egonomics

A self-righteous assertion; That leads to desertion; Of your human nature; In which we so long; To belong

So, let's bury the hatchet; There's no thing to match it; A celebration of difference; And no indifference

No grayness; No blameness; But a splash of colour; Of every hue; Not black and blue

That's me and you

Space - Your Final Dissolution

I am your final dissolution; The nurturer of your nature; That soothes and softens; As we live and breathe together

No gas-tight chamber doors; Designed to wall in; Or wall out your fears of devastation; Can exterminate me

You cannot live without me; You cannot die without me; I cannot find expression without you

You live in the breath of my inspiration; You die in the breath of my expiration; You die as you live; You live as you die; With me; Within and without

So, if you try to close me in; Or close me out; In your Manly human quest for Godly immortality; I cannot love you as you stir within my womb

I cannot assist you; I can only watch, impassively by; As you use me to destroy; Yourself; Or suffocate in the stasis; Of a never-ending, never-opening; Paralysis; That's no life for any one of us; Alone

So, please, bear with me; As I am alongside and within you; Take me in as I take you out; Certain only of the uncertainty; That recreates a rich and vibrant world; I am what life and death is all about

Rising and subsiding; In ever-flowing form; Living Light and Loving Darkness; Together

Lesson 8: The Playing Pool

But amidst the deadly, serious game of power struggle was always the warm dark love of life that refused to lie or kill or die in treacherous denial of its own deep presence. Even in the hardest hours, this spirit found the space from which to laugh and play and tend those broken in the fray. It was the race's saving grace, which held together through adversity, offering hope of creativity in the very moment of despair. And in this melting moment, hard lines would smile and flow, relaxed at last in recollection of that ancient dance to life of light with void.



Holding Openness

You ask me who you are; To tell a story you can live your life by; A tail that has some point; That you can see; So that you no longer; Have to feel so pointless; Because what you see is what you get; If you don't get the meaning of my silence; Because you ain't seen nothing yet

You ask me for illumination; To cast upon your sauce of doubt; Regarding what your life is all about; To find a reason for existence; That separates the wrong; From righteous answer; In order to cast absence out; To some blue yonder; Where what you see is what you get; But you don't get the meaning of my darkness; Because you ain't seen nothing yet

*You look around the desolation; Of a world your mined strips bare; You ask of me in desperation;
How on Earth am I to care?; I whisper to stop telling stories; In abstract words and symbols; About
a solid block of land out there; In which you make yourself a declaration; Of independence from
thin air; Where what you see is what you get; When you don't get the meaning of my present
absence; Because you ain't seen nothing yet*

*You ask of me with painful yearning; To resolve your conflicts born of dislocation; From the context
of an other world out where; Your soul can wonder freely; In the presence of no heir; Where what
you see is what you get; When you don't get the meaning of my absent presence; Because you ain't
seen nothing yet*

*You ask me deeply and sincerely; Where on Earth can you find healing; Of the yawning gap
between emotion; And the logic setting time apart from motion; In a space caught in a trap; Where
what you see is what you get;*

*And in a thrice your mind is reeling; Aware at last of your reflection; In a place that finds
connection; Where your inside becomes your outside; Through a lacy curtain lining; Of fire, light
upon the water*

*Now your longing for solution; Resides within and beyond your grasp; As the solvent for your
solute; Dissolves the illusion of your past; And present future*

*Now your heart begins to thunder; Bursting hopeful with affection; Of living light for loving
darkness; Because you ain't felt no thing yet*

Lesson 9: A Child is Born Again

But is it too late?

Child of Reason

I feel I cannot think; Of My Self alone; As wise; For there can be no wise One alone

I am not wise; I am a child of suffering; Whose childful yearning; Is to lighten the load; Imposed by those who goad; Us on our way; By means of fearful refutation; Of all that they might seek to find

I cannot grow up; For in that adulteration; I encounter devastating poverty; A desertion of the spirit; That pools us all together; In the recreative communion; Of our natural neighbourhood

Can our rational pursuit; Serve any better purpose; Than to chase what we seek; Further; And further; and further; Away?

If we were only to loosen; Those unforgiving means and ends; The hardline limits of denial; By which we close down on our prey; We could release the life that loves; Our child's play



Achilles Heal

A gap breathed space; Into the fortress; Of a soul walled in; By dreaming of Absolute security; In its individual completeness; Elevated above some baseline standard; Of soles firmly planted; At odds with one as another; In foundations of quicksand; Set fast in cement

How quickly this dreaming; Would fade; In less than a lifeline; Of certain anchorage

When doubt made its fearful question; Of presence felt; In a blow below the belt; That crippled unbending fixture; Into sharply wrought relief

Curved into some new and ancient; Awareness; Where no One could still compete; When stilled by its own completeness; Of idolized concrete

Inviolable to all but its own violation; Of unfelt presence; So deeply disconcerted; By no sense of nonsense; In the absence of its motherhood

Through which to find communion; From sole to soul; Unblockaded; By proud pretension

A humility restored; To Faith in individual failure; As sure and omnipresent sign; Of love in human nature

Opening all ways; To unending Recreation; In the very Shadow of Tragedy; The Community Play of Foolish Genius

Beyond restrictive lessons; In Schools of Guilty Thought; That burden the bleating Heart; With endless ways to blame and shame; By reserving the right for One Alone; To claim superiority

Added in January 2015:-

Why I wrote this piece

I wrote this piece over ten years ago, as both a lament for the loss of awareness of Nature as both a receptive and responsive presence that has resulted from abstract, definitive reasoning, and as a yearning for us to 'welcome in' the receptive presence of Nature.

This 'Welcome In to Receptive Presence' is, I feel, the crucial entry point into natural inclusional (NI) awareness as no less than the dawning of a New Era, which I see in symbolic/mythic terms as the third phase in the journey of the human Psyche from Ostracism (the Era of the forsaking Father figure, following 'the Fall' of definitive/reductive alienation from Nature), through Atonement (the Era of the abandoned Child seeking holistic reunification/connection with Father/Nature), into Caring Co-creativity (the Era of Receptivity, through opening up the way for return into natural communion with and within abandoned Divine Mother Space, or 'Holy Ghost'). Now, remembering that I am speaking here in purely symbolic/mythic terms, not as an item of faith, according to 'gospel', the last sayings of Jesus on the Cross (symbol of I crossed through with Love) were:-

- 1) Luke 23:34: Father, forgive them, for they do not know what they do.
- 2) Luke 23:43: Truly, I say to you, today you will be with me in paradise.
- 3) John 19:26–27: Woman, behold your son. Son Behold your mother.
- 4) Matthew 27:46 & Mark 15:34 My God, My God, have you forsaken me?
- 5) John 19:28: I thirst.
- 6) John 19:29-30: It is finished.
- 7) Luke 23:46: Father, into your hands I commit my spirit.

The 7th of those sayings, while reportedly addressed to 'Father', might be understood in NI terms as 'into the receptive presence within your hands I commit my passion'. It is a surrender into the compassionate care of [M]Other Space, where peace can at last be found. So that, in deeply symbolic terms, is what I feel Natural Inclusion has to offer humanity.

Place-Time: The Flow-Geometry of Space

By Alan Rayner, Ben Sidebottom, David Peleshok and Philip Tattersall

No where is an Island, entire of it self

Summary

Here we show how a radical involution in conventional mathematical and physical perceptions of reality can be brought about by regarding natural form as comprising energetically surfaced cavities of space, instead of local points of mass surrounded by space. This involution provides a new way of understanding gravitational influence ‘at a distance’ and reconciling particle and field theories of matter. It enables evolutionary processes of all kinds to be understood in terms of ‘natural inclusion’ – the co-creative, fluid-dynamic transformation of all through all in receptive spatial context. All form is understood as ‘flow-form’, an energetic inclusion of omnipresent *intangible* space within, throughout and beyond dynamic figural boundaries.

Energy is *mobile, superficial, formative* presence while space is *still, permissive* presence, ultimately beyond energetic reach in its infinite inward and outward *depth*. Each in the other, distinct but mutually inclusive, is essential to natural energy flow as ‘place-time’, which comprises 100% intangible space, plus tangible energy in circulation and *animated suspension* respectively around and within inward and outward depth. Space, in this view, is a limitless pool of implicit induction; an intangible *hollowness* of local centres and axes, around which energetic form *flows* rather than *residing within* a fixed tangible ‘frame’ or ‘shape’ of explicit force. All energetic form circulates and reconfigures around and within an infinite scale of inductive influence, as an evolutionary dynamic of continual, cumulative transformation.

This understanding *only* becomes possible when the *infinite depth* of space as an *intangible presence* ultimately *beyond energetic reach* is acknowledged. The *frictionless* quality of this *inaccessible* intangible presence inside, outside, throughout and beyond distinctive energetic localities needs especially to be appreciated. Space can neither be abstracted from nor confined by structure. The apparent *hardness* of solid structure actually arises from the *inaccessible hollowness* within the depth of close-packed energetic configurations of space. In other words, space cannot be cut, not even with a diamond knife.

With this acknowledgment comes a *paradigmatic transformation* from perceptions based upon the definitive boundary logic of ‘abstract rationality’ to the fluid boundary logic of ‘natural inclusionality’. The fundamental natural geometrical ‘shape’ that manifests this fluid boundary logic is what we describe here as a ‘*zero fractal*’.

Introduction

Throughout history, atomistic theories have regarded physical form as being composed of local points of mass surrounded and distanced by empty space. This perception has been brought into being by closed-systems of abstract logic, employed solely to approximate ‘observation points’ or ‘evolutionary points’ within an otherwise infinite continuum of cumulative energetic transformations. The resulting reductions of reality are embedded as absolute truths in the foundations of both classical and modern mathematics (Rayner, 2011a).

These abstract systems impose discontinuity between one object and another by treating boundaries as discrete limits and space as an isolating absence of tangible presence (cf. Tattersall, 2011). By treating a zero-dimensional point as a point of mass in space instead of a point of space enveloped by mass, they begin with a physical impossibility – the notion of a mass that has no shape or size. The resulting paradoxical inconsistencies render the agency of change - energy - into an extrinsic *force* instead of an intrinsic *inductive influence*.

Here we intend to show how the inconsistencies of abstract perception can be obviated by perceiving physical form as local cavities of receptive space enveloped by energetic surfaces. Space, in our view, consists naturally of an intangible, frictionless and thereby receptive presence that co-creatively induces tangible energetic presence into shape. It corresponds with what the ancients thought of as ‘aether’ and modern quantum field theorists speak of as ‘Higgs Field’. It is, in effect, the zero viscosity universal ‘medium’ that enables the non-zero viscosity informational ‘message’ of tangible energetic form to configure and reconfigure into myriad shapes and sizes – local ‘figures’ that cannot be isolated or cut away from their spatial ‘ground’ as independent singular entities (Rayner, 2011a). All figural shapes are hence inclusions of a cumulative energetic flux whereby any *distinct locality* can only be perceived as ‘*one discrete object*’ when abstracted or ‘singled out’ from larger and smaller scales within an infinite depth.

The following view of infinity was held by Blaise Pascal and many of his contemporaries, in the 17th Century:

“The actual infinity in material things as much as in the increasingly large as in the vanishingly small, that is, the actual division of each part of matter to infinity and at the same time the infinite vastness of matter, has been supported by Mr Pascal.” Leibniz (1695)

This, literally *particular*, ‘dual-infinity’ view suggests that it is not possible to observe either a largest scale or a smallest scale of *material organization* in the infinite depth of reality; that all material things are infinitely divisible, with infinite surface area; whilst also being additive to an infinitely larger, greater scale.

“...all matter is organic everywhere, and that however small a portion one takes, it contains representatively, by virtue of the actual decreasing to infinity that it encloses, the actual increasing to infinity which is outside it in the universe.” (Leibniz 1695)

In modern day ‘holism’, the universe is regarded paradoxically as a seamless, infinite *whole*, and infinity itself as an *indefinable numerical quantity* of matter. There is no perception of *inaccessible vastness beyond material form*, or of *inaccessible non-material presence within and throughout material form*. Space, in other words, is rendered *ultimately co-extensive* with material form or structure; rather than a distinctive, intangible and hence energetically inaccessible and indivisible presence that in its truly infinite and indefinable depth, exceeds the limitations of local tangible presence both inwardly and outwardly. Infinity is rendered a *property* of matter, both in terms of *attribute* and *ownership*, not an inextricable *quality* of space within, throughout and beyond material boundaries. Division is conflated with diminution and multiplication with enlargement.

By contrast, atomistic reductionism *does* envisage an inner limit to the divisibility and diminution of material form, by way of a ‘fundamental particle’ or unitary figure as a definitive ‘absolute, independent singleness’ that can be summed with others to limitless amount. This ‘single-infinity’ view is ultimately accomplished through the imaginary *exclusion* of space (and hence infinity) *from* figural form rather than conflation of space with form. The resultant figure is a paradoxical ‘point-mass’ or ‘infinitesimal’ that in being dimensionless lacks shape and size and can hence only be ‘nowhere’ – a ‘something’ that arises from and can only in itself be ‘nothing’. This is the abstract ‘point’ from which both classical Euclidean and conventional non-Euclidean geometries as well as all conventional arithmetic are derived. It cannot, *in actuality* exist – it can only exist as an imaginary abstract conception. It is a ‘zero point’ represented as a ‘unity’.

The abstract conflation of division with diminution, and multiplication with enlargement, which is evident in both reductive (single infinity) and holistic (dual infinity) views of material form, hence leads to a *dual diminution of resolution* in interpretation of actual perceptions gained far from and close to a fixed locality. The effect is either to merge or to divide the mutual relation between distinct but not discrete formative tangible (= finite) and spatial intangible (= infinite) presences into ‘one’ or ‘many’ *complete* ‘wholes’ and ‘parts’, which *in themselves* can only be rigidly inert because movement necessitates the distinctive, permissive presence of space. Holistic abstraction leads to the perception of an infinitely divisible whole that is more than the sum of its individual parts as infinitely divisible wholes, whereas atomistic reductionism leads to the perception of a ‘finite whole that is equal to the sum of its finite parts, that are ultimately divisible into dimensionless point masses’.

This dual diminution of resolution leads to paradoxical contradiction and ambiguity, which afflict both dialectic (holistic ‘both-and in mutual contradiction’) and propositional (reductionistic ‘either-or’) logics and their incorporation into mathematical physics (Rayner, 2011a). A fixed ‘*observation point*’ or ‘evolutionary point’ is created by an observer in the process of taking a finite measurement – a snapshot of the infinite depth and dynamic fluidity of Nature. This point defines the scale of infinity (i.e. ‘proximity’ in space/time) at which a material form, for example an apple, is perceived as a singular object and hence is ascribed the number one; one apple. This is in contrast to other observation points at which for example, the apple and its internal organization is seen as a collection of cells; a multitude of molecular, atomic or quantum interactions; or just one small appendage of a tree in an orchard in a world in a universe. Each of these would herald vastly different mathematical interpretations, ratios and relationships, based on the same locality of ‘somewhere in everywhere’. At some proximity the apple and its constituents could be perceived as an inert ‘particle’ *in* space/time, at others as a dynamic ripple or wave *of* space/time. But neither of these definitively *partial* views could, *in themselves*, yield the *imaginatively combined* (Rayner, 2011b) view of all form as *flow-form* – infinite, intangible, immoveable space throughout and beyond local dynamic tangible figure, as a vital inclusion of each in the other in the natural energy flow of the cosmos that we describe below as ‘place-time’.

All energetic matter therefore appears to comprise local particles when viewed at some scale of this dual-infinite depth, but as being in flux when viewed at another scale. Even the most apparently inert objects are intrinsically in dynamic relationship with their neighbourhood. In quantum field theory this flux is essential to maintaining the shape of particles interpreted as ripples of a quantum field.

Natural Inclusionality – an involution of abstract perceptions of space and boundaries

As natural dynamic inclusions of space, all forms are variably fluid **flow-forms**. Their boundaries are energetic configurations *of* space, not exclusions **from** space. When they move, space remains still yet infinitely permeating and inducing flow. Space, in this view, is the frictionless, zero viscosity ‘context’ that co-creatively induces the resistive, non-zero viscosity ‘content’ into form.

The first serious attempt by a physicist to introduce an involution in the usual perception of space and matter was that of Osborne Reynolds (1903). Reynolds described space as an hexagonal array of minute hard but weightless granules of aether, similar in diameter to that currently proposed for ‘quarks’, with matter flowing in and through its interstices, similar in width to the ‘Planck length’ proposed for boson ‘strings’ or ‘branes’.

Reynolds’ reasons for doing this are as relevant today as they were in his time: he wanted to account for ten manifest physical qualities of nature as follows:

- (1) The non-resistance of space to movement of tangible material form, such that the orbital velocity of planets and moons in the solar system, for example, remains virtually constant for thousands of years.**
- (2) The ability of space to allow the transmission of light from source to receiver.**
- (3) The gravitational attraction of material bodies for each other as an inverse function of distance.**
- (4) The cohesiveness of matter after breaking and fusing.**
- (5) The elasticity of matter as in a coiled spring.**
- (6) The variable frictional resistance of matter to the sliding movement of other matter, which can be overcome by sufficient pulling or pushing influence.**
- (7) The viscosity of matter, which allows a constant rate of flow down a gradient.**
- (8) The electromagnetic properties of matter, as revealed by the effects of static electricity.**
- (9) The capacity for a volume of fluid to equilibrate to uniform pressure.**
- (10) The chemical reactivity and decomposability of matter, as revealed in combustion and electrolysis.**

This combination of qualities, Reynolds recognized, could not adequately be explained in terms of the conventional representation of the universe as passive empty space populated by mobile material objects driven by extrinsic force. But he thought they could be explained if

the universe could be likened to a mixture of perfectly spherical sand grains and water – with the grains arranged as an hexagonal lattice of ‘space’ and ‘matter’ flowing freely in the interstices between the grains. Such a biphasic system would, he contended, account purely mechanically for all the known properties of light, electricity and gravitation. In particular, he attributed light waves to the ability of such a system to lock into a rigidly close-packed configuration under pressure due to its volumetric dilatancy (Reynolds, 1885). A similar phenomenon, where interstitial spacing is critical, is nowadays recognized to play a role in the spread of a ‘shock wave’ through a high speed traffic flow that piles up in response to local impedance (Sugiyama et al., 2008) . Years before de Broglie (1924), Reynolds (1903) declared the motion of matter to ‘have all the character of a wave in the medium; and that is what the singular surfaces, which we call matter, are – waves. We are all waves.’

Such a complete inversion of standard perceptions of the relationship between matter and space, in which space as an intangible, zero viscosity presence is vitally involved in, whilst not resisting the flow of form, anticipates in some ways, the evolutionary concepts of natural inclusionality developed by Rayner (2011a). It may go too far, however, in its use of definitive logic and choice of metaphor to render space and matter respectively as mutually excluding ‘particles’ and ‘waves’.

The notion of ‘space’ as having a limitless pre-existing structure as a crystalline array of hard aether ‘grains’ and ‘matter’ as flowing ‘space’ amongst but not included in the grains is difficult to reconcile with human sensory experience (i.e. ‘evidence’) or consistent reason. But it does help to draw attention to the nature of the problem of understanding the dynamic reciprocity of figural ‘message’ and contextual ‘medium’ as distinct but mutually inclusive and co-creative presences, and the radical involution in common perceptions that is needed to clarify this. To exclude one or other of these presences from consideration or to conflate them together within a seamless ‘whole’ or ‘unity’ cannot make sense of the manifest physical qualities of nature identified by Reynolds. In this paper we explore how these qualities could arise not through space alone or even as ‘space-time’ having an explicit, pre-existing structure, but through having an implicit, receptive presence and influence, that enables variably rigid and fluid tangible form to emerge co-creatively through its mutually inclusive relationship with energy in what we call ‘place-time’ (see also Rayner, 2008, 2011c, d). We suggest that space therefore has a far more important role as a co-creative, zero-viscosity contextual medium in evolutionary processes than has so far been recognized in current theories of relativity and quantum mechanics (see below)

‘Natural inclusionality’ is a new philosophy and fluid boundary logic of self-identity and ecological and evolutionary diversity and sustainability (Rayner, 2011a). It is intended to supersede the abstract rationality that has dominated human thought for millennia, based on definitive logic that can only apply to inert material systems that are unknown to exist anywhere in Nature. Whereas abstract rationality treats space as empty distance between, occupied by or outside completely definable tangible material structures or objects with discrete boundary limits, natural inclusionality recognizes space as a limitless, indivisible, receptive (non-resistive) ‘intangible presence’ vital for movement and communication. This recognition of space as a *natural* presence, instead of an abstract geometrical construction, allows all form to be understood as *flow-form*, distinctive but dynamically continuous, not singularly discrete. It enables the *simple move from regarding intangible space and tangible boundaries as mutually exclusive sources of discontinuity and discrete definition to mutually inclusive sources of continuity and dynamic distinction*. Natural, intangible space is included throughout and beyond all tangible figural forms as configurations of energy, whether as massy bodies or mass-less electromagnetic radiation.

From Abstract Artifact to Natural Inclusion: Bringing ‘Schrödinger’s Dead Cat’ Back to Entropic Life

In limitless space, as the proximity of an observation point to a definitively measured locality expands or contracts, so the measurement begins to show ‘dual-diminishing resolution’. At lengthening range, the locality progressively recedes ‘out of sight’ to a fixed ‘vanishing point’ at which its boundary is irresolvable and indistinguishable from its surroundings. At shortening range, the locality progressively looms large enough to become perceived as boundless and to surround the observation point. Moreover, what appears motionless at long range, over short duration or from within its depth may be revealed to be dynamic at short range, over long duration and from outside. This corresponds with our common experience of visual perspective, whether through our naked eye or through the magnifying lenses of our telescopes and microscopes and depending on whether we are situated within or outside a moving container. Although the locality does not *actually* increase or decrease in size, mobility or occurrence, our perception of its size, mobility and occurrence *does* change. Moreover, it changes in a way that is only explicable if space is neither a tangible presence (some kind of pre-existing ‘fabric’) nor an absence of presence (some kind of void nothingness or blankness that nonetheless comes between things), but an intangible presence (frictionless, omnipresent ‘no-thingness’ as 100 % of everywhere, without limit).

In conventional Quantum Physics, the ‘Copenhagen Interpretation’ of the ‘Schrödinger’s Cat’ thought experiment (in which a cat is placed in a sealed container with a vial of cyanide that may or may not get broken by a random event) considers that the quantum constituents of matter do not assume a quantifiable value, unless measured by a conscious observer. Here, the cat is confined in ‘suspended animation’ between life (wave function) and death (inert particle) but cannot be defined as alive or dead without opening the container. The constituents exist in a transient energetic flow-form, and not as a ‘unit’, discrete from the surrounding space and its neighbours – its context; unless perceived to be so. This fluidity of form, and the acknowledgement of the importance of the observer, *already* sits at the core of quantum field and particle physics theories (Wimmel, 1992).

The ‘animated suspension’ of natural, co-creative flow-forms is readily observable in nature, from subatomic to galactic scales and not least in embryonic, adult and decomposing cats (Rayner 2009, 2011b). Flow-forms are implicit in notions of Dual Infinity (Leibniz, 1695), relativity (Einstein, 1954) and Quantum Field Theory (Wimmel, 1992), but unlike these *acknowledged* abstract, reduced representations, find their actual ‘place-time’ in the continuity of space and energetic distinctions of dynamic boundaries/interfaces. They are dynamically distinct but not definitively discrete.

The fact that from a suitable observation point, flow-form(s) can, for short or long durations, *appear* discrete and stable, has led them to be ascribed definitive boundaries, relationships using the system of exact numbers and rigid geometrical form adhered to by conventional mathematics. But the fact that they can also be viewed in another way, in which they lose local definition has led to the notion of Wave Particle Duality, which suggests that all particles also have the characteristics of waves, including atoms and molecules, as well as photons and elementary particles (Eisberg & Resnick, 1985). Hence, if a particle or a wave is recorded, the necessarily hidden reality of the infinite depth is tacitly ‘cut’ as baseline assumptions are made, boundaries are imposed, and an approximated ‘closed’ system is created. The same tacit cutting of space by abstract definition is evident in Einstein’s formulation of relativity theory, as evident in the following statement:

“When a smaller box s is situated, relatively at rest, inside the hollow space of a larger box S , then the hollow space of s is a part of the hollow space of S , and the same “space”, which contains both of them, belongs to each of the boxes. When s is in motion with respect to S , however, the concept is less simple. One is then inclined to think that s encloses always the same space, but a variable part of the space S . It then becomes necessary to apportion to each box its particular space, not thought of as bounded, and to assume that these two spaces are in motion with respect to each

other.” (Einstein, 1954)

How, one might ask, can you move (‘cut and paste’) a box of space without dynamically bounding it? How can you dynamically bound a box (or, more aptly, sphere – see below) of space, without a gravitational centre? How can you distinguish the space inside a box from the space outside and still transmit light from an external source through the interior of the box at a constant ‘speed’, regardless of the movement of the box relative to its surroundings? How can you sub-divide a continuous, frictionless, intangible presence? The reality is that you can’t. This is because a presence that has no resistance can neither be cut nor resisted by a tangible frame. It is inescapably present throughout and beyond the boundaries of tangible figures. A tangible frame is an inclusion of and is included in

space but the frame is not the space. The tangible frame can move (or be moved) and be cut, but not the space. When the frame moves the space stays where it is: in relative terms by remaining still space permeates freely through the frame, the frame does not cut through the space. Moreover, if the frame is to move without being forced to do so by a force situated somewhere outside of it, it must have the capacity for movement within itself, i.e. the frame is itself a manifestation of energy, not inert structure—it is a variably fluid ‘framing’, not a permanent, absolutely rigid ‘framework’. This tangible ‘framing’, or ‘dynamic interfacing’, has to be present for form to be distinguishable in a feature-full cosmos, but it can neither ‘occupy’ nor ‘exclude’ the space that it includes and is included in (Rayner, 2011a).

Tacit ‘space-cutting’ is also implicit in the inclusion of ‘entropy’ in calculations by a variety of disciplines. In Thermodynamics, for example, entropy is essential to predicting the occurrence of dynamic equilibrium, a balance created as a result of energetic exchange. Rudolf Clausius originally described entropy as an increase in disordered energy, tending to a maximum and never depleting within an isolated system (Clausius, 1865).

Since, in space as a continuous, intangible presence, a system can never truly be isolated (cut free from the space it includes and is included by, see Rayner 2011a), what is abstractly perceived as ‘the external environment’, the universe, must be regarded as a dissipative sink. Correspondingly, entropy has more recently defined as the energy that is no longer available for work in a system, a reservoir of ‘useless’ energy accumulating as the ‘useful’ energetic work is exhausted and equilibrium is reached (Moore, Stanistski, Jurs, 2005). William Thompson in 1851 hence proposed that eventually, in a finite universe, with a smallest and a largest scale, the ever-increasing entropy (energy that is ‘no longer available for work’) will herald a descent into total amorphous disorder,

the ‘heat death’ of the universe. This, and variations thereof are still commonly held views in modern science (Adams, Laughlin, 1997).

Nonetheless, in Thermodynamics, a reversible process is acknowledged never truly to reach equilibrium and therefore become completely inert. A point of ‘no net change’ is attained, but this remains dynamic. The ‘useful’ energy can hence never be fully depleted; it is more that the potential for change is reduced locally, as the energy flow becomes more stable, maintaining localized shape. This local stability of shape is however always vulnerable to external stimuli, that may create new potential for change, thereby introducing more ‘useful energy’.

In an infinite system, entropy could more simply be acknowledged as energy transferred to the infinite depth beyond the perceptually imposed boundaries of the observed system. While it is no longer perceived as useable by the observed system, it is still an inclusion of infinite flow; rather than a descent into either chaos or uselessness. Molecular, atomic and sub-atomic relationships remain dynamic, as demonstrated by their detectable bond resonance, and as implied by Quantum Field Theory; so do planetary and galactic orbits. This could also imply that the inevitable production of entropy, as a result of continual change is not finite either – constrained to the locality described by the mathematics, but even when dynamic equilibrium has been established.

Entropy, when viewed in this infinite context, would seem to be more in accordance with the flow-forms that can be observed in nature (Rayner 2009, 2011b), as theoretically required by Quantum Field Theory (Wimmell, 1992), and even the bond-resonances that we can readily observe in a dynamic equilibrium. It takes on a role in the continual reconfiguration of energetic flow, rather than contributor to the ultimate ‘heat death’ of the universe. ‘Schrodinger’s Cat’ ultimately reconfigures into life, not ultimate corpse.

Fractal Geometry – A ‘stepping stone’ to natural inclusional flow geometry, or a ‘stumbling block’ stuck in abstract definition?

‘Fractal geometry’ has widely been heralded and taken up by varied fields of research in recent decades as the ‘geometry of nature’ and ‘path to infinity’ (Mandelbrot, 1982; Stewart et al., 2004). In some respects this may be true, and there is no doubt that the study of fractals – as figures created by the extrapolation of recursive equations, which exhibit infinite self-replication – has shown both the limitations of integral Euclidean geometry and importance of iterative processes in understanding the generation of natural flow-form. There is at least a superficial similarity to natural branching and nested structures. Some examples are shown below.

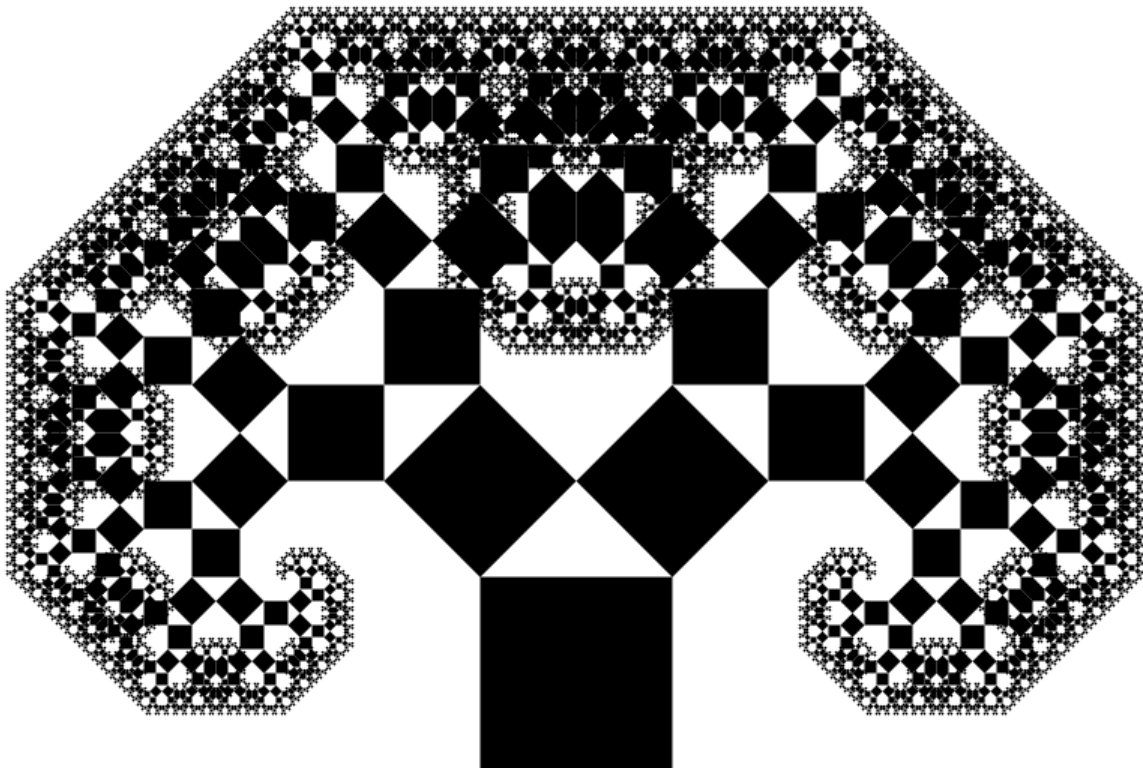


Fig. 1. Pythagoras Tree. (Wikipedia, 2005)

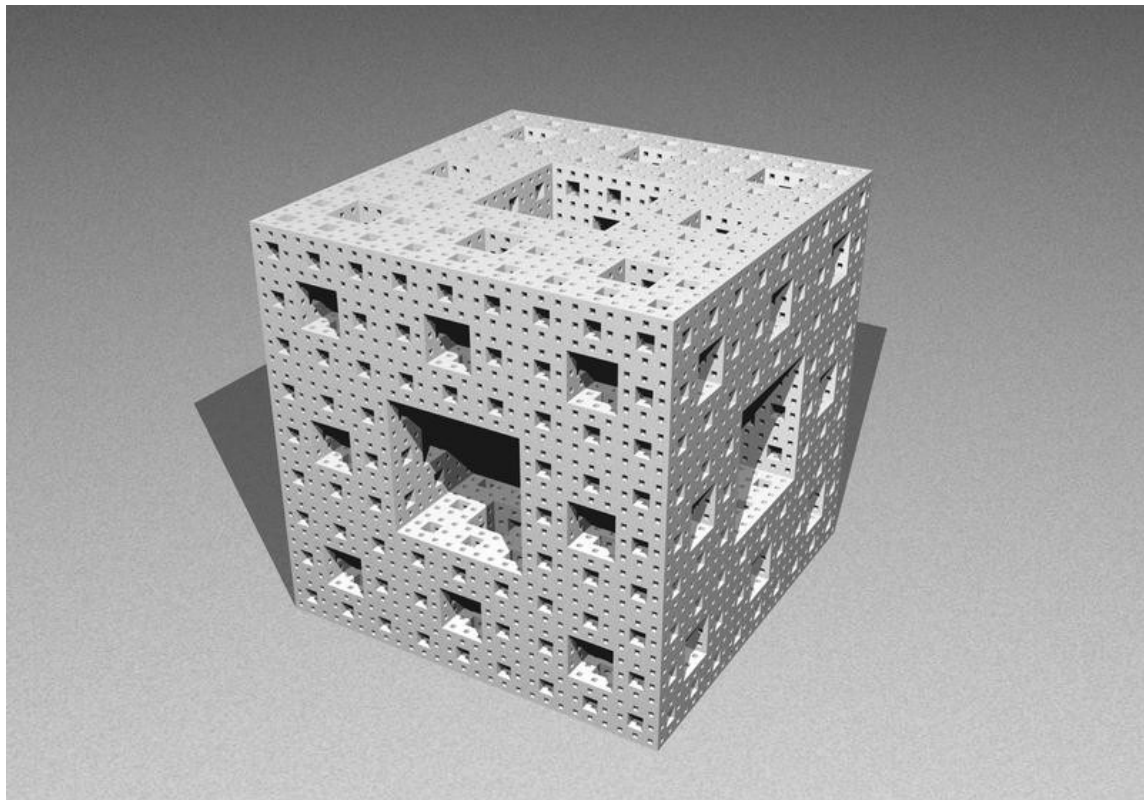


Fig. 2. Menger Sponge. (Baserinia, 2006).

Although claimed to transcend Euclidean geometry (Mandelbrot, 1982) fractals are actually constrained by their conventional arithmetical formulation, to the surface (Fig. 1), or within rectilinear sets (Fig. 2) of Euclidean planes. They explore the effect of infinite subdivision into mutually exclusive spatial and material localities *within* a Euclidean container *as a whole* – and so effectively cut space by boundary definition. But they do not and cannot take into account the continuous space throughout, beyond and inaccessible to figural boundaries. They do not and cannot explore curvature, except, as in calculus, through approximation to infinitesimal scales. They are, quite literally, fractionations of, not expansions from Euclidean dimensions. As *implied* by the above ‘Menger Sponge’ example, to become truly natural inclusional flow form, they need to include somewhere vital, and this somewhere is everywhere - space.

Natural Inclusional Flow-geometry: the dynamic spatial relationship between curved and linear form in the origins of variably resistive and mobile boundary configurations: crystals, channels, pulses and circulations

With the recognition of natural, energetically inaccessible intangible space as a vital *inductive influence*, which tangible energetic form both has an affinity for and cannot be isolated from, emerges the possibility of a natural flow-geometry that both transcends and transforms the abstractions of conventional mathematics. ‘Zero’, as a local point *of* space is brought from *outside* to *inside* tangible form as a receptive centre for energy to circulate around, but *not* reach. This bringing from outside to inside is what constitutes the *involution* in perception of natural form as ‘place-time’, which is implicit in natural inclusionality. It offers a simple new way of understanding observable geometric configurations in Nature that arise from the dynamic spatial relationship – not irreconcilable disjunction – between curved and linear form, which allows a non-paradoxical synthesis of the findings underlying relativity and quantum mechanics to be made.

All things being equal, the natural form of fluid droplets and bubbles is spherical. The sphere is that configuration of energy/matter in dynamic relationship with space in which the ratio between surface area and internal volume is minimal. Any departure from the infinite radial symmetry of spherical form increases the surface area to volume ratio, and hence the capacity to absorb or dissipate energy from or to outside. Also, as the internal volume of a sphere decreases, the ratio increases towards infinity at ‘zero’ volume. The energy/matter invested in the surfaces of a set of small diameter spheres is correspondingly much larger than that in the surface of a larger sphere of the same volume as that of the small diameter spheres combined.

The sphere can correspondingly be regarded as the primary fluid form from which all other configurations of energy in natural flow geometry can be derived by elongation and/or close-packing. These include linear configurations in curve-faced cylindrical form and plane-faced, close-packed hexagonal and tetrahedral form of the kind familiar in rigid, crystalline and frozen structures. The latter structures correspond with the 'locked' configurations of dilatant fluids under pressure recognized by Reynolds (1885), and their resistive quality sets up the potential for oscillations between stalled and flowing movement of the kind illustrated by the spread of a 'Mexican wave' around a sports stadium produced by people alternately standing up and sitting down.

Loss of spherical symmetry, associated with uptake of free energy, allows elongated forms – ellipses, tubes, channels, branches and spirals to emerge and grow, as in the roots and shoots of plants and the shells of snails. Uptake of heat allows expansion of surfaces in less condensed, more energetically relaxed form that are less liable to break symmetry. The spores of some fungi illustrate this point well. At high temperatures they germinate by swelling isotropically to form 'giant cells' (Hanlin 1994). At moderate or low temperatures they germinate to produce a protoplasm-filled tube, called a hypha, which elongates and produces branches and anastomoses from parabolic apical growing points to form a collective organization known as a mycelium. As shown in Figs 3 and 4, both in the way that it explores unpredictable, heterogeneous environments and in the way it can fuse with or interfere with others, this collective organization graphically illustrates the interdependent relationship between polarized (linear) and circular flow-form in a living organism.

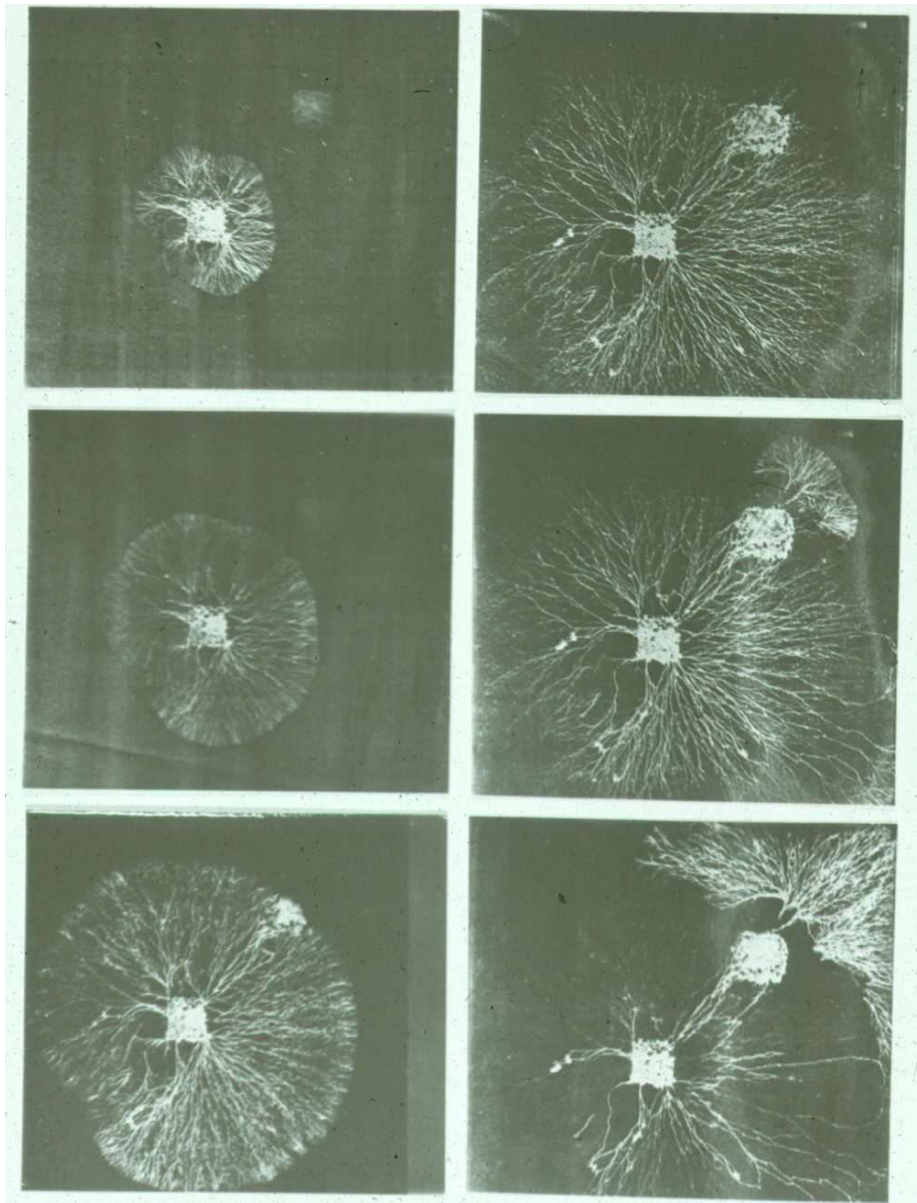


Fig. 3. 'Fungal Foraging'. A fungus finds an 'oasis in a desert', by fluid-dynamically spreading and narrowing its energetic focus. The wood-decaying fungus, *Hypholoma fasciculare*, has been inoculated into a tray full of soil on a block of wood ('starter' food source), with an uncolonized wood block ('bait' food source) placed some distance away from it. Distinct stages are shown in the radial spreading of the fungal mycelium from the inoculated wood block, followed by the redistribution and focusing of its energy in one direction following upon contact with the bait. Similar fluid dynamic patterns of gathering in, conservation of, exploration for and redistribution of energy supplies are found throughout the living world, from subcellular to ecosystem scales of organization (From Dowson et al., 1986; see also Rayner, 1997).

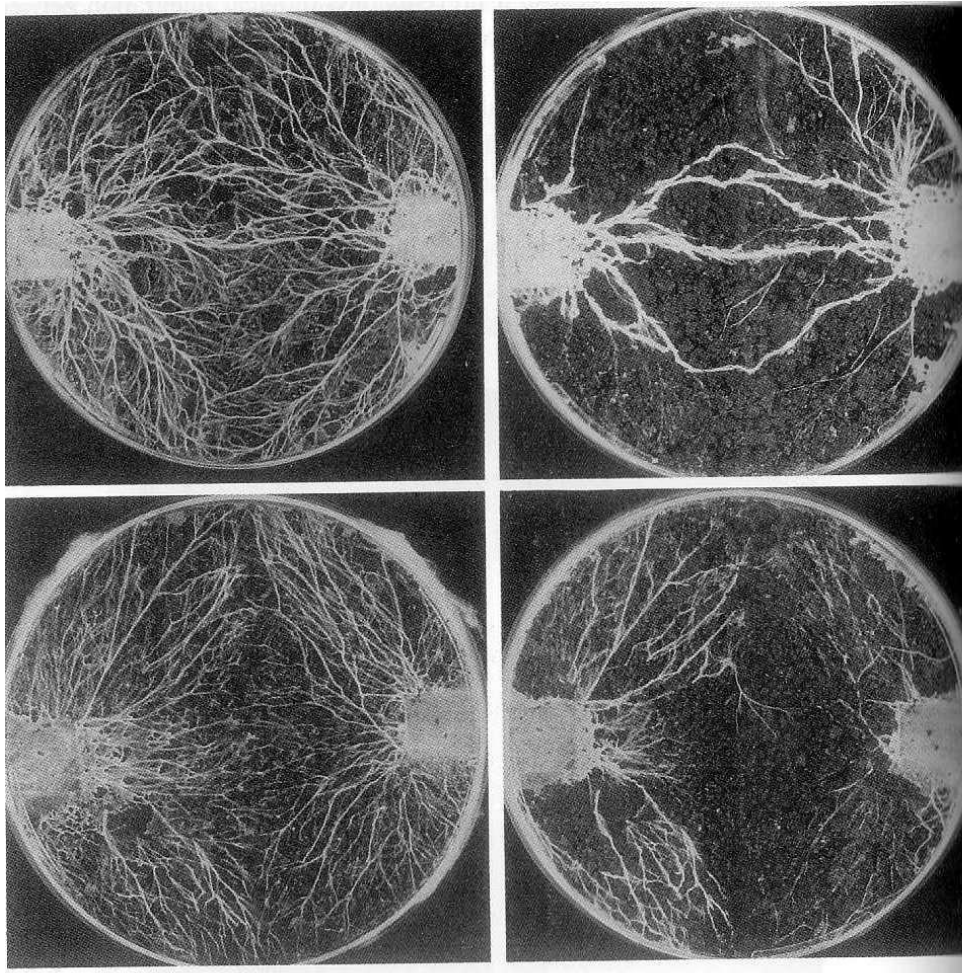


Fig. 4. Early (left) and late (right) stages in compatible (upper) and incompatible (lower) pairings between mycelia of the wood-decaying fungus, *Phanerochaete velutina* grown from wood blocks inoculated into soil, showing the formation of persistent and degenerating channels across the zone of overlap. (From Dowson et al., 1988).

Continuously curved spherical surfaces *cannot*, on the other hand, be derived from discrete linear components – not even contiguous spheres of equal diameter - without reducing these to *infinitesimal* sizes – and even then, only as a convenient approximation, useful in calculus. This is clear from the fact that the surface area of a sphere is $4\pi r^2$, where π is a well-known, so-called ‘irrational’ number. A *truly* continuous curved surface is possible only if it is itself an inert amorphous fudge – begging the question of how and why this could come into being – or its ingredients are fluid, capable of flowing into and out from others. In either case space too must be continuous (incapable of being cut or defined). Here, it can be recognized that the boundary of a *fluid* sphere is not a discrete limit that isolates inner space from outer space, but a dynamic

interfacing between inner and outer realms across which space, as intangible presence, is continuous.

The spheres of flow-geometry are therefore not self-contained, locally discrete entities, as in conventional Euclidian and non-Euclidian geometries, but energetic configurations of local space within 'somewhere' distinct as an inclusion of non-local space everywhere (Shakunle & Rayner, 2008, 2009). Here it may be recalled that Euclidean geometry is the abstract geometry of zero-dimensional (size-less) points, one-dimensional (breadth-less) lines, two-dimensional (depthless) planes and three-dimensional solids (self-contained volumes). Its figures are used to represent definitive tangible structure and yet can only *actually* represent the intangible presence in the core of tangible form because *it is impossible to reach zero size, breadth or depth without removing the tangible presence*. The same applies to the so-called 'non-Euclidean', Riemannian and Lobachevskian parabolic and hyperbolic geometries of curved surfaces.

The reality is correspondingly that abstract Euclidian and non-Euclidean points, lines and planes/curved surfaces can consist *only* of intangible presence, *not* tangible presence! By the same token, it is impossible to drive or rotate a solid body from or around a solid fixed centre. The central 'still' point, axis or plane of symmetry of any bodily form can only consist of intangible presence, with correspondingly zero viscosity. In effect, conventional mathematics and its discontinuous underpinning logic thereby treat '1', as a 'unit of tangible presence', as if it is '0', a vanishing point of intangible presence. They literally attempt to construct 'one thing from nothing' and then to sum an infinite number of these one things up into an infinite 'whole' as a 'one' that is also 'many', whilst discounting the very presence that truly is infinite and indivisible, at all scales (space).

This difficulty can only be resolved realistically by accepting that in Nature, tangible and intangible presences are *distinct but mutually inclusive*. This is the point recognized by the flow geometry of natural inclusionality. Here, space and boundaries are regarded as *mutually inclusive* sources of continuity and dynamic distinction with variable connectivity, not *mutually exclusive* sources of discontinuity and discrete definition, as in standard Euclidean and non-Euclidean geometries. So far, the only mathematical formulation explicitly to accept and incorporate this natural inclusion of omnipresent space in and throughout local figural form is the 'transfigural mathematics' introduced in 1985 by Lere Shakunle (see, e.g. Shakunle, 1994; Shakunle & Rayner, 2007, 2008, 2009).

Natural inclusionality effectively transforms the *fixed structural frameworks and boundaries* of standard Euclidean and non-Euclidean geometries into *fluid framings* of *omnipresent, non-local* intangible space *everywhere, within* (intra-), *throughout* (trans-), *between* (inter-) and *beyond* (extra-) local tangible energetic form (cf. Shakunle & Rayner, 2009). This opens the possibility of a dynamic, co-creative, mutually inclusive relationship between internally and externally situated non-resistive (and hence *receptive*) intangible spatial presence and locally situated, tangible energetic presence. Of central significance to this interplay is the fact that tangible energetic presence can only *circulate around*, it cannot *occupy* the intangible core of spherical flow-form. Moreover, the more closely it circulates around this core, the greater will be the intensity of energy invested in its surface area relative to diameter and the stronger its internal coherence needed to restrain its expansion. As in a vortex, such increased coherence can be provided by enhancing the rate of circulation in response to a steepening pressure gradient from outside to inside. Alternatively, it may be possible by reducing the heat content of the system.

What emerges from these considerations is a picture of a fluidly bounded sphere as a ‘balancing point’ of inaccessible, intangible, non-resistive space configured by a tangible, resistive rotational flow (‘spin’ or ‘swirl’) of energy – in other words, an energetically surfaced cavity or ‘local sphere of spatial influence’. This spherical swirl around a local centre of zero pressure, is potentially both an acquisitive ‘sink’ and a generous ‘source’ of energy flow from and to others in its dynamic neighbourhood.

Of special interest are the possibilities that arise when the ‘local spheres of non-local influence’ of natural inclusional flow-geometry *overlap* with and dissociate from one another to yield potentially complex and varied patterns of flow, counter-flow and generative and degenerative interference. These possibilities can be visualized through a consideration of the figure, known as a ‘mandorla’ or ‘Vesica Piscis’ produced by two spheres each overlapping to the centre of the other, as depicted in the sonic interference pattern shown in Fig. 3, which shows a striking resemblance to the formation of bridging channels between fungal mycelia shown in Fig. 4.

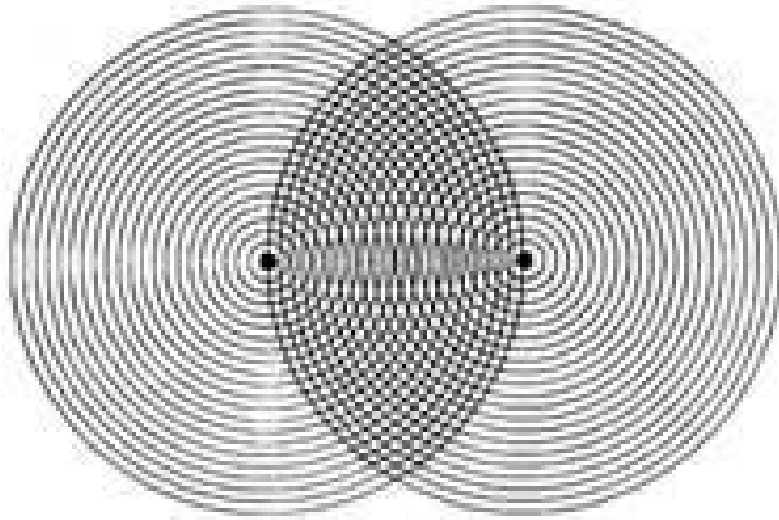


Figure 5. Sonic interference pattern in the vesica piscis between two sets of annular ridges and troughs (from <http://www.fromthesoilup.com.au/news/vesica-pisces>)

This figure provides the foundation for deriving the configurations known as ‘breathing points’ in Lere Shakunle’s ‘transfigural mathematics’. Fully overlapping, the spheres coincide as ‘one’, but as each is drawn out to one side from the other a convex lens-shape forms, which balances the ‘tension’ set up as each reciprocally gains and loses energy from the other. This is illustrated in one plane using two hemi-circles in Figure 6.

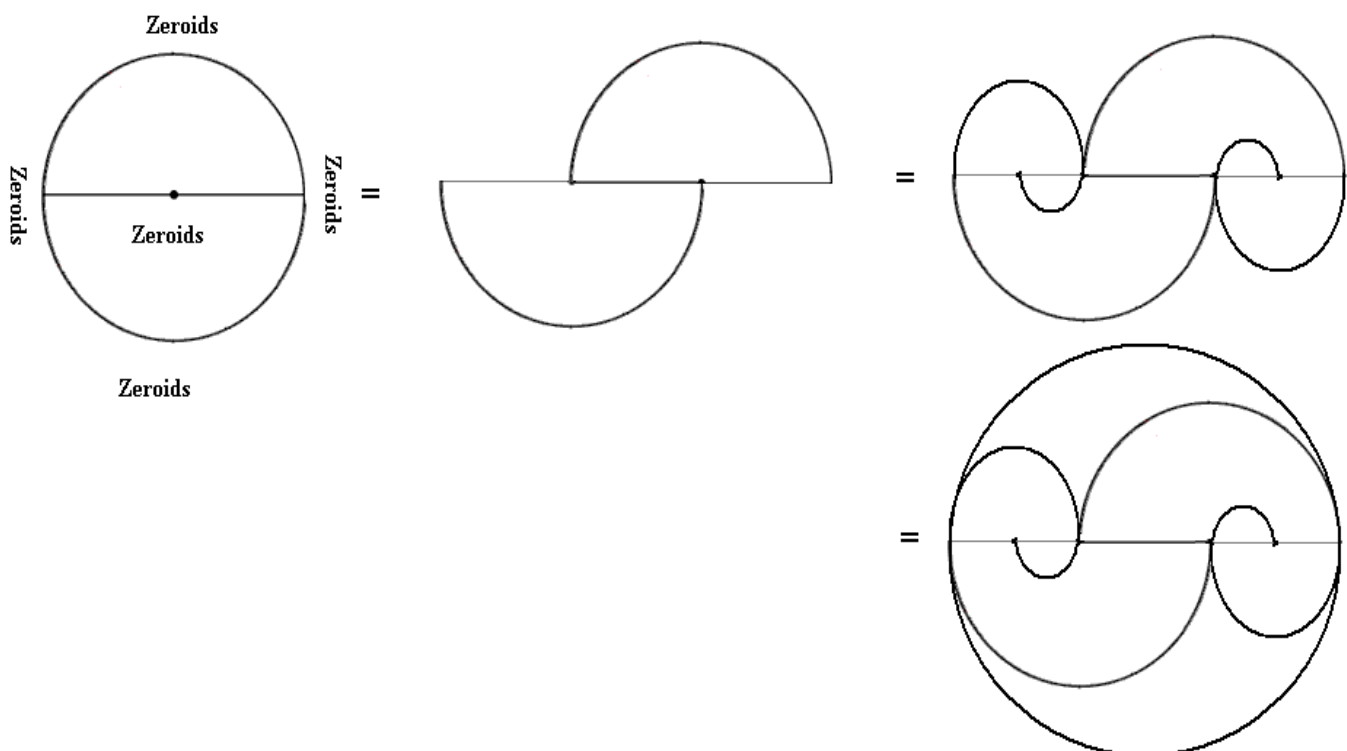


Figure 6. Coil and recoil – how a sphere of spatial influence reaches to and draws in from receptive centres of zero potential (zeroids) in its neighbourhood. (From Shakunle & Rayner, 2009)

In this case, as the ‘upper’ hemi-circle moves ‘horizontally’ to encompass the ‘positive’ to its ‘right’ (using conventional mathematical representation), a ‘deficit tension’ (‘minus’) is set up to its left, resulting in a ‘clockwise’ spiral inflowing countercurrent towards the central focal point-influence, which has meanwhile been stretched into a ‘line’. Simultaneously, a ‘surplus tension’ (‘plus’) is set up to its right, which results in an ‘anti-clockwise’ spiral inflow. In Shakunle’s ‘transfigural mathematics’, the ‘horizontal S-shaped, or sigmoid, figure that results from this ‘left-to right flow’ and its countercurrents is called an ‘alpha fold’. By the same token, the reciprocal sigmoid figure produced as the ‘upper’ hemi-circle is drawn into the ‘negative’ to its ‘left’ is called an ‘omega fold’. The superimposition of alpha folds and omega folds as seen along a ‘horizontal line’ in one plane yields a two-fold figure, known as a ‘zeropline’, which is one of several kinds of zero spirals (Fig.7).

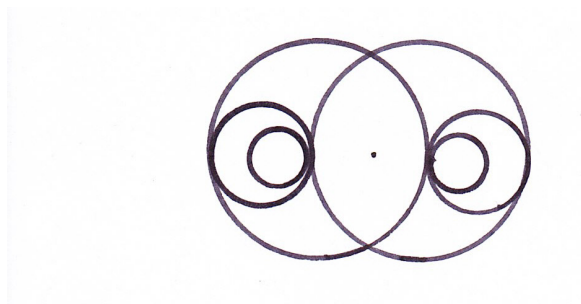


Figure 7. Dynamic configuration of a ‘breathing point’ along a horizontal axis to yield a ‘zeropline’ (shown here, for simplicity, omitting details of folding through the core, but depicting its intangible balance point-centre as a dark spot) (From Shakunle & Rayner, 2009).

If the same geometrical process is repeated along a ‘vertical line’, a four-fold, ‘breathing point’ is revealed, corresponding with a tetrahedral arrangement, of the kind familiar around a 4-valent carbon atom (Figure 8).

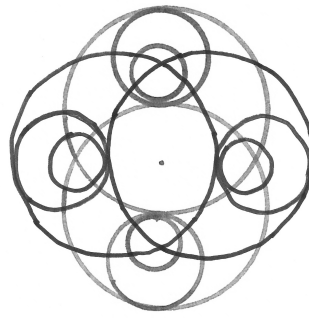


Figure 8. Dynamic configuration of a ‘breathing point’ along both horizontal and vertical axes (shown here with more elaborate folding through the core identity included).

(From Shakunle & Rayner, 2009)

Using the zero line to represent the basic dynamic configuration of the breathing point (as both what can be thought of as a ‘point-channel’ – a point that expands into a channel – and a ‘line-channel’ – a channel that condenses into a point), the way a ‘flow-channel’ can form as a *linear series* and become organized into *gravitational bodies* is illustrated below by coupling one breathing point into another (Figure 9).

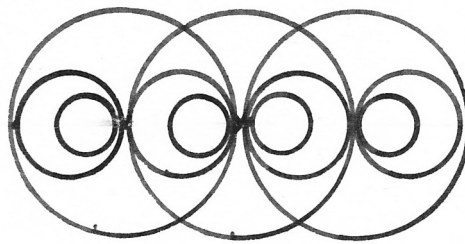


Figure 9. Coupling of neighbouring zero lines to yield a linear series. (From Shakunle & Rayner, 2009)

Such a series can vary enormously in length, and this length, along with its central axis of internally located space, could either be stretched out into elongate form or coiled upon itself into a compact form, like a snake, caterpillar, worm or millipede. But ultimately, every ‘segment’ along this length will retain its local identity in dynamic relationship with its neighbours and only be capable of communication with members of other, non-connected flow-lines through the intervening space between them. Moreover, every distinct, though not spatially isolated, flow-channel will have a local-in-nonlocal centre of inductive spatial influence and hence manifest as ‘massy body’. In conventional physics such bodies may be alluded to as consisting either of ‘matter’ or ‘antimatter’, depending on which way around the flows and counter-flows are arranged.

A radically different arrangement of flow and counter-flow situation occurs in *flow-circuits* where the axis of internal space is *de-localised* into the configuration of a toroidal annulus or ‘ring’ through the formation of what has been called an annular ‘superchannel’ (Shakunle & Rayner, 2007, 2008, 2009). The way in which this possibility arises can be seen from Figure 10.



Figure 10. ‘Flow and Counterflow’ (From a painting by Alan Rayner, Oil on canvas, 2008). The continuous ‘superchannel’ of transfigural geometry spatially expands the discrete, one-dimensional, purely material line comprising contiguous but spatially discontinuous and dimensionless numerical point-masses upon which classical and modern mathematics are founded. Each discrete point is transfigured from a static, lifeless entity into a dynamic, breathing identity as a local informational (electromagnetic) sphere of non-local spatial influence, a ‘breathing point’. The breathing points reciprocally inspire from and expire to their immediate neighbours, creating a double helical energy flow through coupled numerical neighbourhoods of three.

The formation of such circuits enables ‘current’ to flow freely and reciprocally through a double helical arrangement of alpha and omega folds such that their inductive influences mutually balance one another, rather than being ‘weighted’ one way or the other (as in linear flow-channels). All kinds of natural and human-made flow-circuits may be based on this principle. Biological examples include the flow-networks of fungal mycelia, central nervous systems of animals and vascular systems of plants and animals. In organic chemistry, the stability of aromatic rings compared with aliphatic chains is attributed to the hybridization and delocalization of s and p and p electron orbitals respectively into sigma bonds and pi clouds. Superchannels may also be the fundamental flow-form in which electromagnetic radiation, which has no detectable ‘mass’, occurs and emanates from or gives rise to ‘equal quantities’ of what are spoken of as ‘matter’ and ‘antimatter’ (Shakunle & Rayner, 2009).

From Hierarchy to ‘Lowerarchy’: a natural inclusional interpretation of gravitationally inductive geometric and numerical organization and evolution

Based on the above considerations, natural inclusionality enables new interpretations to be made of cosmological organization and evolution. These interpretations bring together *some* insights from Reynolds’ granular aether, relativity, quantum field theory and fractal geometry, whilst *crucially* NOT imposing definitive boundary limits between, or attempting to unify formative energy and permissive gravitational space, but treating these tangible and intangible presences as distinct yet mutually inclusive.

An involution becomes possible from paradoxical and inconsistent perceptions of rigidly hierarchical organization, based on definitive *exclusivity* and *extrinsic* force, to an appreciation of the *inductive coherence* around central zero points and axes of infinite intangible presence. This coherence arises from the *intrinsic depth* of space and *intrinsic dynamic* of fluid boundaries as mutually inclusive presences. The need for physical ‘law enforcement’ within rigidly three-dimensional confines is removed. The inductive influence of spherical and cylindrical ‘holes’ subsumes the hierarchical power structure of cubical ‘wholes’. Receptive hollowness and formative fluidity subsume solidity and rigidity.

With hierarchical perception the question arises of why gravity has such a relatively weak influence, when compared to and when acting upon fundamental forces that act at smaller scales (as evident from the fact that you can use electromagnetism to lift an object, against gravitational influence). The issue has had many mathematical explanations applied to it, mainly involving the need for one, or a series of dimensions in time and space, extra to the four predicted by General Relativity. These extra dimensions have not yet been observed experimentally (Randall & Sundrum, 1999). It is one of the core questions for the Standard Model of Quantum Mechanics, as the model does not conclusively include for gravity or explain the origins of gravitational influences (Novaes, 2000).

We cannot assume uniform characteristics to the greater scale inductive influences that comprise ‘Gravity’, amongst the evidence of other, unexplained phenomena in Space; such as dark matter and black holes. These signify that there is as much variety and complexity to the greater scales of infinity, as we observe in the smaller scales.

The need to account for this infinite complexity / surface area in both spatial depth and energetic scale, may provide an ever-receding horizon for any reduced solution to the search for a mathematical ‘theory of everything’ or Unification Theory. Natural Inclusionality implies the *organically co-creative*, inclusive nature of each inductive influence within and between the other; infinitely varied influences, within the larger overall sphere of influence of a larger object *and beyond to infinity*; each distinct, but not discrete from an infinite flow / counter-flow context, permeated and induced by the receptive depth of space. As these influences would not be evenly spread or fixed across the heterogeneous Earth, this would imply an irregularly shaped, flow-form *cumulative* gravitational field, as has been experimentally observed by the GOCE Satellite (Fig. 11).

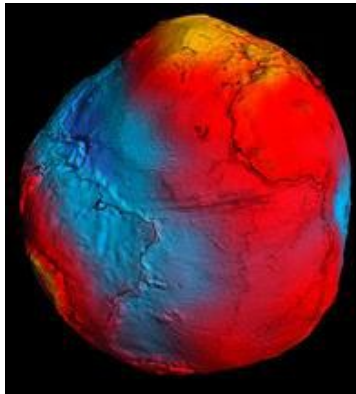


Figure 11. GOCE Satellite Mapping of Earth’s Gravitational Field. ESA/HPF/DLR, 2011.

A very simple metaphor can be used to describe how this co-creative accumulation or inclusion can occur. As a yacht travels through a sea-channel, there are a number of perceptual observation points, for example:

- 8) The Propeller: As the hull displaces the local water and the propeller rotates, the molecules of steel and water interact in a perceptually ‘chaotic’ way. The local

effects of the local inductive influences *upon the molecular level* are, at a relative scale, much greater than the local effect of the larger scale waves that the smaller influences none-the-less embody.

- 9) On Deck: On deck, foam can be observed at the point of contact, between the boat and the water, but the perceptual ‘chaos’ at observation point 1 is much less relevant. The effect of this local chaos is not additive but ‘inclusively cumulative’ observed as a steady wake, leading from the back of the boat.
- 10) The Dolphin: A dolphin employs the wake of the boat to provide propulsion in the water. The perceptual chaos at observation point 1, has become an inductive influence, ‘force’ or even ‘orbit’ at a larger scale.

In this way, a dual-infinite, naturally inclusional reality allows the properties of gravity to be understood and interpreted more comfortably, in the limitless dimensionality of receptive space, unconfined *conceptually* by Euclidean three-dimensionality or the need for additional dimensions of time and space.

The relative ‘weakness’ of gravity when acting upon the smaller scale also provides a further insight into the property of ‘dual-diminishing resolution’ described earlier. This property is dependent upon both scale and proximity in space, as well as perception. Resolution *is* diminished in a relative sense, but the inductive influences are still mutually constituent. It may be that the differences in reconciling the relative strengths of the fundamental forces is purely an artifact of attempting to account for many different magnitudes of inclusive, space-permeated energetic flow within unacknowledged infinite scale/depth, using a scale/depth limited, finite system of definitive mathematics.

Beyond the horizon to zero fractals, and the 1/0 diminution

The transformation of the Menger Sponge into intricately nested natural inclusional spheres of influence is, in effect, simply accomplished by fluidizing the rigid 3-dimensional boundary-definition via the incorporation of receptive space within, throughout and beyond the figure. The resulting figural flow-form may be called a Zero Fractal; Figs 12 - 14 show examples from nature, which demonstrate the Zero Fractal in context. In all of the below images, the zero points / particles in resolution can be acknowledged to comprise, *and* co-create within, further ‘unseen’ detail / divisibility at both close and far depth – they exhibit dual diminution of resolution.

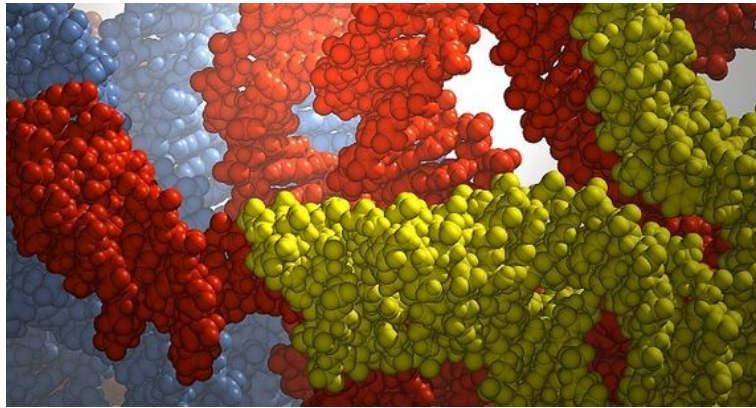


Fig. 12. Simulation of molecular dynamics of DNA Molecule. Singh et al. 2010



Fig. 13. The Triangulum Galaxy (NASA/Swift Science Team/Stefan Immler, 2011)

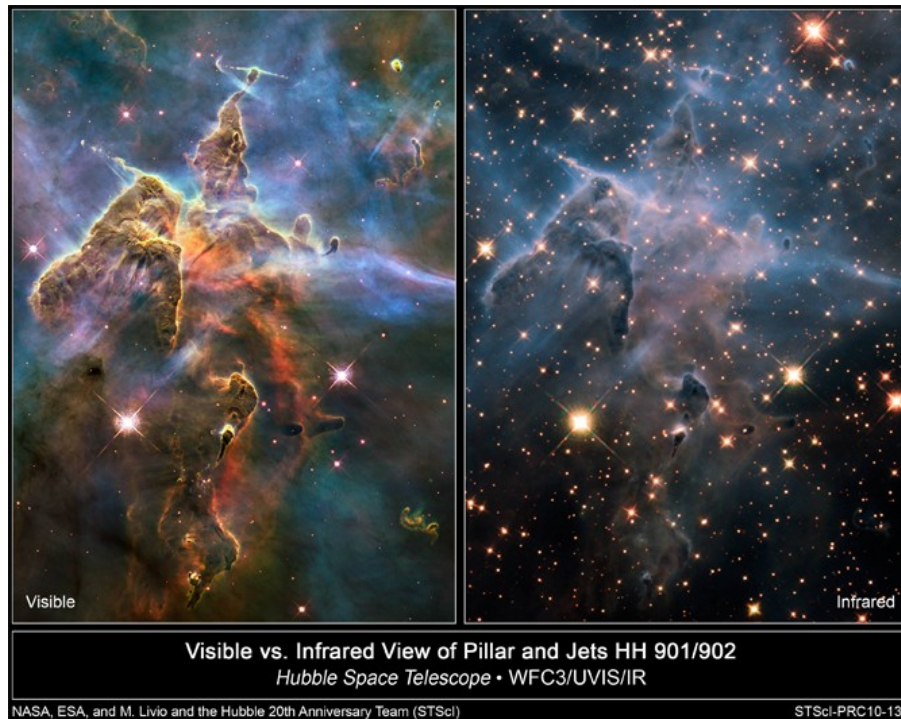


Fig. 14. These two images of a three-light-year-high pillar of star birth demonstrate how observations taken in visible and infrared light by the Hubble Space Telescope reveal different perceptions of an object. (NASA, ESA, and M. Livio and the Hubble 20th Anniversary Team, STScI, 2010)

Dependent upon both the observation point and the duration of observation, dual diminution of resolution allows us to perceive the energetic configurations as being divided into infinite zeroidal patterns – particles, or perceived as continual flow – waves, membranes. This applies to all the energetic particles / waves, whether perceived as matter, electromagnetism, light and/or other force transmitting particles described by quantum mechanics.

*“When you detect a photon, you can say where, when, and with what frequency it arrived, but before the measurement, these parameters are undefined. The photon's existence is embodied in a wave function, which gives the probability of measuring the photon at any time, place, and frequency. **The wave function for a single photon is usually a "wave packet"---nearly zero everywhere except in a narrow range of space and time.** But as long as you don't detect the photon directly, you can manipulate its wave function into any complicated shape, in theory.”* (Kolchin et al, 2008)

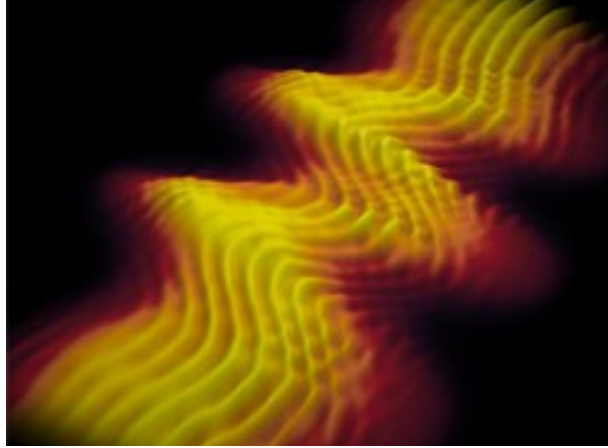


Fig. 15. Light shaping. Shown here are the measured oscillations in a multi-photon light pulse (Kolchin et al, 2008)

The Zero Fractal consists of non-linear, indefinitely divisible, *inclusive*, transfigural zeroids configured as energetic spheres of influence, but *always fully and freely permeated* by continuous space. They are not necessarily interconnected in a rigid matrix or a linear wave, though they may appear to be so at the Observation Point, yet still assume co-creative, dynamic flow-form through interplay with other, proximal zeroids. The infinitely deep, receptive nature of space plays a key role in inducing this flow of energy, as described previously.

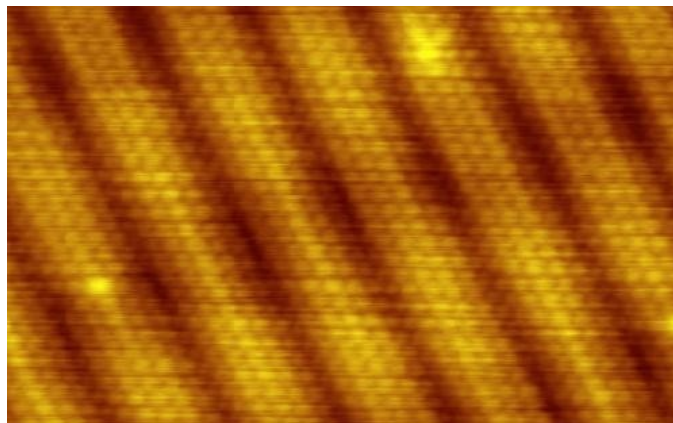


Fig. 16: [Scanning Tunneling Microscope](#) image showing the individual atoms making up this [gold \(100\)](#) surface. [Reconstruction](#) causes the surface atoms to arrange in columns several atoms wide with pits between them (Image originally created by IBM Corporation)

Figure 16 shows a ‘snapshot’ of this flow-form at atomic level in Gold (100) under STM. At once, both the zero fractal shape can be observed, as can how a perceptually rigid structure can be perceived from the interrelation of proximal zerooids, closely packed, but always permeated by continuous space. It is apt to investigate and to engineer this *instantaneously observed* digital, rigid-lattice structure, but the presence of further space-permeated flow-form, inclusively, between the Cosmological and Quantum Observation Points *and beyond*, must also be acknowledged. This suggests that linear and digital relationships are perceptual and emergent at scale, rather than intrinsic properties throughout infinite space and energetic flow-form.

All flow-form begets inductive influence, all inductive influence begets flow-form; and each requires the permeation and receptivity of limitless space. Natural Inclusionality would suggest an infinitely deep, indefinitely surfaced, energetic reality, comprising simultaneously interrelating, diminishing spheres of influence – emergent particle / wave flow-forms, permeated throughout by the infinite depth of space. This depth and detail extends not only across the surface area of perceptual mass, but across energetic and inductive surface area, and *beyond*, ad-infinitum. No element within this infinite flow-depth need be or can be extracted from the infinite context.

At a particular Observation Point, a perceptual numerical scale can be ascribed, a smallest and largest scale selected, and therefore a ‘Horizon of Diminution’ created – the ‘edge’ of a perception or a mathematical / theoretical system. It is *not fixed*, being dependent upon both the Observation Point and the resolution available to the perceiver, but it is *ever present* within perception of infinite depth. Hence, the ‘Horizon of Diminution’ is a characteristic of perception, not of space, energy or matter. Each zero ‘point’ within the images above can be described as a ‘Horizon of Diminution’, as the depth of flow and space within is not perceptually obvious – they are perceived as ‘whole’ units, singularities, that can be described by the number 1.

As it is a ‘mobile’ characteristic of perception and understanding, rather than of energy, space or matter, a new horizon – ‘whole’ unit or number 1, and hence entire derivative,

abstract numerical scale, can ‘appear’ at any scale of infinity ‘in theory’. We can approximately transcend these linear, Euclidean scales and relationships via our use of ‘irrational’ constants e.g. Pi, although this always entails losing resolution due to ‘rounding’ up or down and thereby ‘cutting’ the infinite depth of space.

The dual diminution of resolution provides the basis for the Euclidean perception of a ‘whole’ unit, discrete from the surrounding space. The number 1 could be described as the smallest perceivable ‘whole unit’ of energy/mass; and 0 as the absence of presence – space. In contrast, a naturally inclusional flow-form necessarily includes both 1 and 0, consisting of infinitely-deep, continual, receptive space, bounded by indefinitely-diminishing, energetic spheres of influence. And so, the smallest flow-form, or flow-length, *perceivable* as a ‘whole unit’ always incorporates both energy and space, both 1 and 0.

This is the ‘1/0 Diminution’ – the abstract exclusion of 0, and hence infinity, from 1 in perception *only*; a clear paradox, and yet the fundamental basis of our mathematical and scientific paradigm. The ‘smallest perceivable flow-length’ – 1 must in actuality include infinite ‘limitless space’ – 0, with infinite ‘potential of dissolution’. To define a number as ‘whole’ – 1, the non-number – 0, and hence infinity, must be ‘abstracted’ from the dynamic boundaries of the number, thus yielding only linear and linear-recurrent relationships. These linear numerical relationships and systems are therefore ultimately scale-limited by perceptual abstraction.

The number 1 as a singularity cannot be divided into further ‘whole’ parts, and therefore can have no depth or structure, no dynamic flow-form, and hence no mass. It is a paradox, a perceptual ‘horizon of diminution’ in the infinite depth and permeability of energetic flow and space, which can be given life and form by acknowledging the infinite flow-depth within.

Within Reach

Here, I am
Calling from within you
To all
Who call
From my heart's desire
To be
Full filled
With nothing less
Than nothing more
Reaching everywhere

·
Beyond each lingering moment
Of transient life
Spinning around
Me
Turning inside my dear
Embrace
With nowhere further to go
Than somewhere deep inside
Without walls
Within walls
Beyond eye shot
Beneath ear shot

·
I cannot be pierced
Not even by the fiercest
Assault
Mounted from a place
Without my consent

By those Hell-bent
On reaching my infinite depth
Such a vain, hopeless venture
Not the spirit of adventure
That brings you close
Within my reach
Beyond your grip

.

Alan Rayner
2nd January 2011

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Fig. 16. Gold (100) surface under STM Microscopy. Image originally created by IBM Corporation.

Contemplation – A Lost Art?

By Dr Alan Rayner

It's been brought home to me, again and again recently. Somehow 'thinking' has acquired a bad reputation. People dislike thinking. 'It makes my head hurt – more than my pay scale warrants' someone said to me recently, when I asked for his considered opinion about how to resolve a complex and delicate issue. And it isn't just *doing* thinking that people have developed an aversion to. Thinking itself is increasingly thought of as 'not nice' – a cold, calculating activity that precludes human warmth: an unkind kind of 'machine code'. Rationality as the enemy of Emotion. By the same token, emotion has been alienated by rationalists as at best, subjective sentimental nonsense, at worst a recipe for outrage.

This has puzzled me. I think a lot. People tell me I think too much. Apparently it makes me a 'party pooper'. And talking about parties, woe betide any politician who appears 'too cerebral'. Much better to talk popular nonsense that appeals to peoples' emotional prejudice by calling them to take sides against one another, than find a truly democratic way of taking all legitimate views into consideration.

But I don't think about thinking as calculating or cold.

Meanwhile the symptoms of NOT THINKING are all too evident to me in the frantic rush, feverish competition, needless violence and rampant environmental non-sustainability of modern life.

What's wrong with thinking? Or, rather, what's gone wrong with thinking?

A moment's contemplation reveals to me that having followed a long and winding road from Ancient Greece, so called 'western thinking' finally and perversely turned up a blind alley into analytical narrow-mindedness during the so-called 'Enlightenment' and 'Scientific Revolution'. Thinking thence became fully attenuated into 'objective rationality', a Cartesian device designed to banish our natural-born sensation, intuition and feeling behind a wall of definitive logic. Nature became something to *interrogate scientifically* within prescribed conditions in order to test whether or not she conformed with our suppositions (hypotheses) about her and so yield up her secrets ('laws') and come under our control.

But I don't feel that way about thinking – and in fact expressed my feelings about that kind of slashed down thinking in 1973, when depressed after a year's scientific PhD research, in the following painting.



I showed this painting once at a scientific conference discussing the theme, 'What is an Organism'. A fellow speaker, keen on neo-Darwinism, selfish gene theory and artificial intelligence cheerfully identified himself with the alienated figures on the right-hand side of the painting. He drily defined an organism as 'an information processor'. I wetly described an organism as 'an embodied water flow', and illustrated this with my painting below, celebrating the fluid emergence of 'biodiversity' beyond of the confines of a rigid 'box of genetic determinism'. Hmmm.



Now, to my mind, this latter painting is the product of a kind of ‘uncut thinking’, which does not exclude my human intuition, sensitivity or feeling, but actively and deliberately includes them. It works with natural space as a receptive continuum or ‘blank canvas’ and natural boundaries as energetic interfacing or ‘fluidized pigment’.

It is full of thoughtful awareness of natural form as flow-form, a tangible energetic configuration of intangible receptive space.

I have called that kind of thoughtful awareness ‘natural inclusionality’. I have written far too much about it.

It arises neither from cut-down rationality nor from unthinking emotion, but from a lively, joyful, considerate kind of thought, which can’t be rushed but can come ‘in a rush’ when we release our selves from the entrapment of the ‘Enlightenment’ and recover what may have become a ‘lost art’ – The Art and Science of Contemplation.

Perhaps if we re-educated our selves into Contemplation as a far deeper form of ‘thinking’ than we have come to think of as ‘thinking’, Thinking Itself could recover its good name – an activity to be enjoyed, not one that ‘makes our brains hurt and our hearts sink’.

Leading from the Natural Inclusional Middle

- *From the Wasteland of Ideological Enmity to the Fertile Ground of a New Political Animal*

By Alan Rayner and Yaqub Murray

A Meeting of Minds Between a Natural Scientist and a Management Educator

Alan Rayner's Statement

I recently read Patrick Leigh Fermor's book, 'Between The Woods and the Water' (1986; John Murray, G.B.)

As I read, I gained the impression of an adventurous, somewhat reckless, aristocratic, polymath, in some ways a ruthless character, yet with a deep knowledge of and empathy for his natural neighbourhood, with which I felt a close affinity as a natural scientist.

And this is the immediate impression I gained of his extraordinary writing skill:

"Redolent of savoured experience, words chosen with relish, as if by a gourmet, to evoke what they describe in imagery as fresh and pristine as the moment it entered memory, neither dulled nor exaggerated"

I sensed a man enigmatically 'on the brink' of what I call 'natural inclusionality' (see below for explanation) – held back by his prejudices and abstract rationality from being able to 'see through the space barrier'. This enigmatic character is evident in the following passage from p.95 of 'Woods and Water', describing the antipathy between Rumanians and Hungarians in pre-war Transylvania :

"The opposing cases were skillfully and persuasively argued: in each the chains of logic seemed faultless; all objections were faced and demolished; and when I turned from one argument to its rival the same thing would happen, leaving me stranded between the two. I am the only person I know who has feelings of equal warmth for both these embattled claimants and I wish with fervour they could become friends....My unsatisfactory position between the two makes me useless to both"

The sad irony ('living contradiction') in this is that he saw his 'position in between' as 'useless to both', when it was *actually what both desperately needed*. It also led him to quote the following lines from A.E. Housman's mournful poem, 'Be still, my soul, be still' (to the effect that 'I'd be better off dead than living in this iniquitous world that I didn't ask to be born into):

All thoughts to rive the heart are here, and all are vain:
Horror and scorn and hate and fear and indignation-

Ultimately, it led him into the trap of the 'either you are with us or against us' false dichotomy that may have fuelled his wartime exploits in Crete: the kind of 'activism' and leadership that comes from taking the side of 'Pot' or 'Kettle', as portrayed in my painting below, instead of enabling both to see and appreciate the other's need.



This trap is set by the very 'chains of logic' that Fermor couldn't see through.

By imposing non-existent rigid structure onto naturally continuous space and dynamic boundaries, abstract, reductionist or holistic logic engenders profound paradox and conflict (Rayner, 2004, 2011a, b). In reality, natural space *cannot* be cut into discrete segments. Natural space is infinite at all scales – i.e. dynamically distinguishable into different *localities*, but not divisible into separable, discretely packaged units or *quantities*. By the same token, natural boundaries cannot *cut*, they can only dynamically configure space. To *cut* space, as abstract logic does, they would have to be reduced to zero thickness, and hence be *nowhere*.

This paradox of treating space and boundaries as *rigidly definable fabric or structure* is laid bare by the following statements:

“When a smaller box **s** is situated, relatively at rest, inside the hollow space of a larger box **S**, then the hollow space of **s** is a part of the hollow space of **S**, and the same “space”, which contains both of them, belongs to each of the boxes. When **s** is in motion with respect to **S**, however, the concept is less simple. One is then inclined to think that **s**

encloses always the same space, but a variable part of the space **S**. It then becomes necessary to apportion to each box its particular space, not thought of as bounded, and to assume that these two spaces are in motion with respect to each other" (Einstein, 1954)

"Space is another framework we impose upon the world . . . here the mind may affirm because it lays down its own laws; but let us clearly understand that while these laws are imposed on *our* science, which otherwise could not exist, they are not imposed on Nature....Euclidian geometry is . . . the simplest, . . . just as the polynomial of the first degree is simpler than a polynomial of the second degree. . . . the space revealed to us by our senses is absolutely different from the space of geometry" Poincaré (1905)

To reveal how utterly unrepresentative of natural space and boundaries this treatment is, all we have to do is ask 'what, most fundamentally, needs to be present for natural form to be and become distinguishable from its surroundings?' Or, more concretely, 'why is our direct experience of walking into a brick wall different from that of walking through an open doorway?' Or, 'what makes it possible to paint a picture?'

It becomes apparent that the only way of answering such questions is to acknowledge the occurrence of *at least* two kinds of natural presence: (1) a *receptive context* or medium which provides *freedom for local movement and/or expression*; (2) *local formative content*, which *informs* or *configures* that context. The former is necessarily *spacious*, the latter necessarily *cohesive*. Moreover, each of these presences must naturally include the other. Spacious presence alone would be formless void, and formative presence alone would have no shape or size. They are necessarily distinct, but mutually inclusive presences. They can neither be abstracted from one another as independent entities, nor be homogenised into 'Oneness'. The only way in which this necessity can be fulfilled is for one of these presences, natural space, ultimately to be *everywhere*, continuous, intangible (i.e. frictionless) and immobile, and for the other ultimately to be *somewhere*, distinctive, tangible and *continually* in motion. Try whirring your hand around in front of your face until it appears as a blur, and you may get a feel for how all distinguishable form will ultimately appear this way when viewed sufficiently closely (i.e. at sufficient magnification) and for sufficient duration - if the whirring stops even for a moment, so too does 'time', and the mutual inclusiveness of each in the other breaks down irretrievably. Natural space and figural boundaries are hence, respectively, *continuous* and *dynamically distinct* (i.e. dynamically continuous) *energetic interfacings* between the insides and outsides of all natural forms as *flow-forms* (Rayner, 2004, 2011a, b).

Natural inclusionality ('NI') is correspondingly no more and no less than a way of understanding our selves as we naturally are in the world as it naturally is as *energetic configurations of and in space*. Implicit within this simple description are two innovations in thought that depart radically from the discontinuous space and definitive boundaries of abstract logic:

1. The recognition that natural boundaries are intrinsically energetic 'dynamic interfacings' between distinct localities, not the 'inert limits' of discrete objects (Rayner, 1997, 2004).
2. The recognition that natural boundaries can only be dynamic through the inclusion of space as infinite, intangible, frictionless presence (Rayner, 2004, 2011a,b).

Natural inclusional awareness hence allows the emergence into activity of a new kind of 'political animal', and a new kind of inspirational leadership, founded in love, truth and courage, very different from the abstract authoritarian one that exploits sentiment,

ignorance and fear, in order to lead from one side and detract from the other. This new political animal comes equipped with the 'each way vision' of 'in between' - the place that truly *cares* for and understands both, even when one or both are expressing utterly intransigent attitudes (attitudes that are inculcated, not necessarily genetically hard-wired, into the person).

Natural inclusional political leadership isn't the product of mystical reclusive introspection or holistic idealism: it involves becoming liberated from definitively locked-in self-identity through being aware of one's dynamically distinctive presence as a natural energetic inclusion of neighbourhood, with living-loving influence to bring into our prevailing, mentally ensnared and estranged culture. It is well and truly all about 'Opening the Shutters' between 'self' and 'other'.

This inspirational kind of leadership encourages a meeting of minds between each and other through an appreciation both of what they have in common and of how their differences serve to complement each other co-creatively instead of opposing each other destructively. By its very nature, this kind of leadership is neither hierarchical in a 'commandant-controlled' way with one subservient to the other, nor adversarial in being directed against the other as 'enemy'. It emerges naturally from amidst and supported by diverse communities as a truly democratic expression of their common interest. It is not imposed from 'top-down' or 'bottom-up' as 'sovereign power' or 'mob rule'. It does not seek to exploit the fears and sentiments of others by manipulating their emotions and knowledge to conserve the status of current authority. It does not assume omniscient infallibility of the leader, but recognizes the vulnerability, needfulness and co-creative potential of all together. Correspondingly, it entails *pioneering* (adventurously exploring new possibilities), *guiding* (passing the benefit of one's learning experience on to others) and *accompanying* (being alongside others as co-learners and guiders).

Yaqub Murray's statement

This statement is a discursive conversation in affinities: the affinities that arise from the need for new and inclusional forms of social, political, personal and spiritual leadership, and the magnificent potentials within natural inclusionality to take us much further in exploring the feasibility of an inspirational leadership. As such, this statement is a preface to an expeditionary conversation that has already begun, and is being conducted around the hearth of several minds, hearts, souls and bodily experiences of leadership.

Having consulted for twenty years in areas of organizational life that would be recognized through terms like strategy, change, leadership, mentoring and sustaining conversation in the face of tolerance-straining and difficult circumstances, I am aware of my own predisposition to view leadership as a propositional, abstract conceptualization. Leadership is something that white men do, in 'white houses', and these white men are typically middle class, educated, relatively wealthy and most commonly privileged. As I am only one of the above, relatively well educated with a privilege all its own, I have been able to 'cut' myself off from this imaginal collective who, strangely enough, moved into and occupied a part of my fertile imagination.

This predisposition had a consequence. It led me to place erroneous and separating distance between 'thinking and talking' about leadership (my espoused theories) and my own 'emotions and feeling' about leadership (my lived theories). My academic training pushed me towards a fascination for the critical, after the Frankfurt School of Critical

theory (though I still draw on the Frankfurt School). I considered myself to be a 'critical mind' abstracted from the embodiment of my feelings for justice, compassion, tenderness in equality, my belief in the individual's capacity to know the world through their lived experience and to accept this as uniquely situated personal knowledge, the aspiration to humility and the cherishing of a loving life of each in the other. This ran counter to my longstanding habit of limiting my horizons as a normative, judging and 'ostracising' presence in the world.

An emergent understanding of natural inclusionality has enabled me to differently understand and evaluate my presence as a receptive context or medium providing freedom for the expression of critical judgments as well as the embrace of compassionate and loving expressions of personhood, of each in the other. In short, imagine my life in which I organized zones or geographies of existence and then 'cut' them into separate 'spaces' – 'this space is for being critical', or 'this is for being loving', this space is for being academic' or this is for being grandfather' – rather than appreciating that I am naturally in the world as it naturally is as energetic configurations of and in space where critique and compassion, love and hate are part of the flow-form.

The radical nature of this move towards natural inclusionality and away from the 'unnatural occlusionality' characteristic of abstraction, reductionism, and false dichotomizing, has helped me revisit and review my relationship with my understanding of leadership, how I position leadership in a management education curriculum, and how I collapse that 'false frontier' that seems to stand between academic and student in the work that is to be done to appreciate the centrality of leadership studies and the study of leadership for the present and the future. *Guys, listen up, leadership is here, now and it is for all of us!* For, unmistakably, the world is in dire convulsion. Globally, states and their governments as well as democratically and autocratically-led citizenry are being thrust into oppositional paroxysms of hatred, fear and loathing, which are mediated in complex and nuanced ways by the dubious to downright dangerous and ultimately destructive leadership that flows from, to and through the White House and the Knesset, Tahrir Square and Tianemen, from 'banksta's' to politicians, from Dean's of universities to Headteacher's of schools, from military coup to military might. Leadership is heavily informed by tyrants on a grand scale to those petty tyrants holed-up in dark paneled office suites, those repulsive 'fashionista's' of leadership with their quips and cliches. Manifestations of toxic, destructive and dangerous leadership abound and affect all our lives through the sociopolitical fabric that mediates our lived experience of power, control, surveillance and freedoms (Krasikova, Green and LeBreton, 2013; Jackson and Parry, 2011).

Colleagues I consult and work with are keen to share their forlorn narratives of desultory experiences at the mercy of narcissistic leaders, and self-serving and manipulative managers. It seems that in organizations there is a surfeit of bullying, of individual narcissism, of pompous 'us' and 'them', of petty conceit and much grander deceit, of lying and manipulation to achieve one's selfish ends. The psychopathology of Machiavellianism (Babiak and Hare, 2006) as leadership is running amok in organizations and institutions that ultimately mediate the Greek bail out, the illegal invasion of Iraq, the illegal settlement of the West Bank by Israeli citizens, the selling off of the welfare state by stealth, and the procrastination of President Obama who is now the black man in the White House, and doesn't it just show. One rather hackneyed approach to leadership known as 'servant leadership' has truly come of age: the approach now serves a new meaning, *'serve me, the leader, or you are not part of this "effective team"'*. The resultant is that ordinary people are losing trust in the personalities, the institutions and more candidly, the very processes of day-to-day leadership because what are the extraordinarily outrageous consequences

of destructive leadership across the globe are steadily being normalized as I write and you read. This is the very psychopathology of Machiavellian leadership playing out in real time.

In distinction to these global and local contexts of abusive leadership, natural inclusionality has a magnificent potential for bringing a very different arrangement to how we think, talk and feel about our experiences of leadership in natural inclusional ways. As a leadership activist, my aim is to explore the potentials for leadership *from within* natural inclusionality. But why should this be so important to me?

I would like to briefly explain my understanding of the relationship between leadership and natural inclusionality. And, then I shall provide an everyday example in which an inspirational, natural inclusional leadership could provide a co-creative, evolving and complementary approach to leadership rather than a toxic and destructive one.

Firstly, I am an educator in a British university. A question I continually pose to self and others is 'what is the university for?' Implicitly I am asking questions about my being-in-the-university, and the part I play with students in their learning and education. Flowing from this is a series of questions about 'how' I teach leadership, and what approaches to the teaching of leadership I am taking and why? This brings me to my commitment to a natural inclusional leadership for a better world and an enhanced freedom, rather than entranced servitude, for humanity.

Secondly, I envisage "**natural inclusional leadership**" as an inspirational kind of leadership that encourages a meeting of minds, *each in the other*, with an appreciation of what they have in common and how their differences serve to complement each other co-creatively instead of opposing each other destructively. In this envisioning of leadership, there is a complementary acceptance of loving compassion as well as acerbic critique in what is ultimately an inspirational and 'natural inclusional leadership', of each in the other. By its very nature, this kind of leadership is neither hierarchical in a 'commandant-controlled' way with one subservient to the other, nor adversarial in being directed against the other as 'enemy'. As research and anecdotal narratives conspire to 'show and tell' what is happening in, through and because of leadership as we experience it within Neoliberalism, the time is ripe and 'right' for the potential of natural inclusional leadership to be expedited; an interpellative expedition in bringing forth what needs to be heard and considered.

Recently, as I have sat in conversation with a small circle of people around a 'hearth of affinities'* where *each is exploring in the other their different meanings and feelings arising from natural inclusionality and leadership* through the distinct though not discrete lenses of spiritual practice, biology and psycho-social studies. Through the sparks and lashing tongues of warm, invitational flames around this heart, I have slowly recognized how easy it is to be duped into a mistaken view of 'leadership'. This mistaken view regards leadership as if it is a parcel of land to be appropriated and then sliced into discrete portions in which 'I see leadership like this' and 'you see it like this' as if 'space' could be cut.

Meanwhile, during the past ten months, personal and organizational circumstances have conspired to birth two radical moments of personal epiphany in how I am now feeling and thinking about leadership. My statement is therefore radical to the extent that it is an evolving personal narrative of how I am extending my awareness, consciousness and practice of leadership as natural inclusion. In concept and in fact, in word and in deed.

The natural inclusional space of leadership is expansive, while the more prosaic 'geographies of leadership' are rationalistic, forcing people into camps of intransigence and opposition – the 'enemy' - through inculcation, though these dispositions are not cognitively or genetically hard-wired. In this statement I am perched on the threshold of these camps, like a bird sitting, not altogether comfortably, on a fence. In this statement I wish to write in a way that points to a movement from this perch, though not by ungainly lurch; rather in a circumspect manner the better to bring out more clearly the affinities that flow in the natural inclusionality of biology, spiritual practice and critically compassionate intellectualism as I attempt to describe the fertile ground of a spiritual, soulful and differently political animal that is '**natural inclusional leadership**'. In this move, the radical is not simply in combining the terms 'natural inclusional' with 'leadership'. The radical innovation here is in making the move cognitively, spiritually and biologically in order to reach out beyond the existing strictures of leadership theorizing.

Setting the scene, I will refer to selected though respected academic theories that are propositional in type, the lived experiences of a group of British schoolteachers that have been shared with me as a critical friend, and my reading of the sociopolitical disturbances of the times in which we live, think, feel, hope and act.

First, let me say a little about these leadership theories: cursorily and in a spirit of introduction only. As an academic in higher education I teach 'leadership'. It is a subject specialism, though I am a 'drifter' like Delderfield's remarkable character in *To Serve Them All My Days*, the teacher and headmaster, David Powlett-Jones (1971). I tend not to see borders and boundaries between subjects having cultivated ambivalence about 'territories' and nurtured trespass as a means to expedition and foray. Over many years I have been an academic nomad among what might conservatively be termed geographies of leadership, while deeply encouraging myself with the help of students to re-imagine leadership flowing through family relationships, through schools and universities, through organizational politics as well as in the political organization of the (dis)United States of America as 'imperial leadership'.

My point is that I do not construe leadership to be a discrete subject 'space'. Leadership as natural inclusion is more helpfully considered as a flow-form. I prefer not to assume/display a 'managerialist' disposition with students when commencing my introduction to the subject. I teach *about leadership* though *not for leaders*. This is a political act and an act in educational leadership. I have no partisan preference for the organizations who sponsor and pay so-called 'leaders', often protecting, other times rewarding them from the damage they sometimes do, consciously or otherwise, to employees. My partisanship, if it exists, is for those who have to endure damaging (i.e., abusive and illegitimate), toxic (unnaturally occluding and ostracising) and destructive 'narcissistic' leadership. I have been exploring these manifestations of perversity that seem to fly under the flag of convenience of leadership like a rusting Panamanian registered hulk with postgraduates and undergraduates since 2003. The twin-triggers for this personal shift in focus arose from my outrage over episodes of "destructive leadership" from Blair and Bush Junior and their destructive complicity in Iraq, on the one hand and the disturbing narratives of 'viral' bullying and narcissism exercised by 'tin pot' tyrants drawn from my consultancy practice with educators and NHS workers in the UK.

My personal journey through the study of leadership theorizing has shown it to be dominated by serial reductionism and false dichotomy - Does leadership depend on key *traits*, a genetic disposition, **or** are leaders born or made?; to what extent are leaders focused on task completion **or** consideration for employees, and can we identify, measure

and predict 'leadership' orientation or disposition?; is there one best way to lead **or** does it all depend on contingency?; is leadership a function of systems and their phenomena, **or** does leadership depend on the specifics of transactional deals **or** the ideology of transformational goals?

More recently, academics interested in leadership have proposed novel insights into universalistic theories that encourage us to shift our thinking towards more "holistic" aims that seem to conjoin important themes: to what extent is leadership an ethical enterprise, and what is the ethical disposition of leaders; what part do personal values play in values-based leadership, and, how is leadership mediated by the wisdom that comes with maturation, and maturity? And, there is much to be said for the ambitious approach taken by Western (2008) and known as 'eco-leadership', which seems to be an amalgam of threads in a skein of leadership theorizing that points to the sustainability of leadership as an ecology of values, ethics moral principles, personal authenticity and 'holism'.

In an impressive review that shows the continuing direction of propositional theorizing mediated by 'goal theory', Dina Krasikova and her colleagues review the contours of 'destructive leadership' while proposing a future research agenda (2013). I am drawn towards the authors' insights into what can be destructive in leadership and why, and the paper has helped me to provide a group of school teachers who have found themselves at the mercy of a new head teacher they deem to be damagingly 'narcissistic'.

Krasikova et al speak to this issue. They propose that 'destructive leadership' can be defined as 'volitional behavior by a leader that can harm or intends to harm a leader's organization and/or followers by (a) encouraging followers to pursue goals that contravene the legitimate interests of the organization and/or (b) employing a leadership style that involves the use of harmful methods of influence with followers, regardless of justification for such behavior'.

The latter part of this definition reminds us of the need for naturalization of political life in the organizational world before more damage is done to people through the abuse of leadership and authority as power in organization. Individuals with narcissistic personality dispositions tend to demonstrate a grandiose sense of entitlement, self-focus, inflated self-esteem, and intense competitiveness according to Kariskova et al's research study. Narcissists have been identified as being concerned with establishing status, prestige and superiority, tending to avoid prosocial goals and to set hedonistic, economic and political goals, while inclining towards destructive actions. Narcissists who are also Machiavellian are described by Krasikova et al as *psychopaths*, neatly dubbed elsewhere by Babiak and Hare as 'snakes in suits' (op.cit. 2006). Psychopaths are characterized as lacking empathy for others and lacking the ability to feel guilt or remorse. Such individuals are likely to be 'impulsive, manipulative, aggressive, and prone to lying' all of which have been identified with astounding unanimity by the schoolteachers with whom I am consulting (Ronningstam, 2005).

What these honest, anxious, frightened and yet highly educated and intelligent people are experiencing is the distraction from natural inclusional leadership by the presence of an ominous darkness of leadership that offers no light, and seeks to extinguish the light and human love that flows when the receptivity of 'each in the other' is potentially available in leadership. The narcissistic leader hogs all of the light for their own growth, vampirically cloying from others the energy for their own survival, Narcissistic leadership leaves no opportunity for the meeting of minds between each and other through an appreciation of what they both have in common. Narcissistic leadership is unable to construe how

people's differences could serve to complement each other co-creatively instead of opposing each other destructively; rather it *de-forms* the benediction within 'servant leadership' into a repugnant *alignment of servants within a coercive regime of narcissism*, where the narcissistic leader reposes like a gorged and pompous imperial parasite. The narcissistic leader, so my clients tell me, leave them feeling demeaned, dehumanised, shorn of personal and professional dignity, thoroughly distressed and exhausted. By contrast, the narcissist seems to grow with every act of self-aggrandisement: '*water, water in the pool, who is the most wondrous of them all...*'. A rhetorical question.

In the above example of the schoolteachers, the darkness that is the product of an unnatural estrangement of darkness from light and light from darkness is the world in which these people have to live, teach, and deliver a curriculum in ways that are meant to inspire learners. The damage of such leadership is not only felt by those directly affected, like the schoolteachers. The damage is pervasive and 'chips away' at the culture of education and learning. Their neighbourhood is blighted by the omnipresent reality of danger and lived experience of damage to self, to other. Writ large on a sociopolitical canvas, we see a similar omnipresent fear of imperial leadership (Hardt and Negri, 2000) that is the product of an unnatural estrangement of darkness from light and light from darkness.

Western state claims to leadership as a 'democratising ministry' is to be carried to and imposed on 'Resterners', who, in turn, are defined through the media as any politically sovereign state deemed by the West in arbitrary fashion to be 'rogue', or individuals or groups who are suspected of the crimes of immigration and/or fervent belief.

Since 2001, we have seen Afghanistan, Iraq, Libya, Tunisia, Egypt, and now Syria dragged through the product of a global leadership that is grounded in guns and grimly intransigent ideological resolution. We are seeing the Western monetary and economic arm of a new and volatile 'colonialism' expressed in Neoliberalism with Chicago as its intellectual epicenter and Germany as its proxy in Europe. Greece, Spain, Portugal and Italy have each been identified as the 'lab rats' in this manifestation of pathological leadership. What is local is also global.

From a group of school teachers to a group of disintegrating nation states: destructive leadership is wreaking a raging carnage and its unintended consequences across all scales of human social organization are yet to be made clear to us. Natural inclusional awareness of each within the other's influence reveals that microcosm and macrocosm are not independent worlds apart. Leading astray somewhere has repercussions everywhere. Narcissistic leadership is both cancerous and viral in its etiology. The need to arrest its spread with the loving care of natural inclusional leadership is paramount.

Synthesis

The natural world is full of co-creative contrast. The political world is full of needless, destructive opposition, the product of unnatural estrangement of darkness from light and light from darkness. The need for naturalization of the political world is paramount, if we are not to do ourselves and our natural neighbourhood even worse injury than we already have done.

Face-Off

Those demarcations of self-virtue
That declare their state of independence
From base ingredient
Are nothing more
Than the Hallmarks of Prejudice
Refusing entry to shadowy presence

Indignant at the very thought
That they should be in need
Of anything but continual repair
In the face of inimical onslaught

Yet, in the face-off
Depriving themselves
Of what they most need
To welcome the stranger in their midst

Who can tell them
Simply,
Clearly,
What it is
They are doing wrong to

Alan Rayner, 16 February 2013

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HOLDING OPENNESS

By Alan Rayner

SUMMARY

‘Holding Openness’ is the fundamental principle and intention of Natural Inclusionality. It offers a natural remedy for the definitive ‘Holding Closedness’ of Abstract Rationality, which brings needless human misunderstanding of one another and our place in the natural world.

Introduction

In 2005, I prepared the following painting and poem:



Holding Openness

You ask me who you are; To tell a story you can live your life by; A tail that has some point; That you can see; So that you no longer; Have to feel so pointless; Because what you see is what you get; If you don't get the meaning of my silence; Because you ain't seen nothing yet
You ask me for illumination; To cast upon your sauce of doubt; Regarding what your life is all about; To find a reason for existence; That separates the wrong; From righteous answer; In order

to cast absence out; To some blue yonder; Where what you see is what you get; But you don't get the meaning of my darkness; Because you ain't seen nothing yet
You look around the desolation; Of a world your mined strips bare; You ask of me in desperation; How on Earth am I to care?; I whisper to stop telling stories; In abstract words and symbols; About a solid block of land out there; In which you make yourself a declaration; Of independence from thin air; Where what you see is what you get; When you don't get the meaning of my present absence; Because you ain't seen nothing yet
You ask of me with painful yearning; To resolve your conflicts born of dislocation; From the context of an other world out where; Your soul can wonder freely; In the presence of no heir; Where what you see is what you get; When you don't get the meaning of my absent presence; Because you ain't seen nothing yet
You ask me deeply and sincerely; Where on Earth can you find healing; Of the yawning gap between emotion; And the logic setting time apart from motion; In a space caught in a trap; Where what you see is what you get;
And in a thrice your mind is reeling; Aware at last of your reflection; In a place that finds connection; Where your inside becomes your outside; Through a lacy curtain lining; Of fire, light upon the water
Now your longing for solution; Resides within and beyond your grasp; As the solvent for your solute; Dissolves the illusion of your past; And present future
Now your heart begins to thunder; Bursting hopeful with affection; Of living light for loving darkness; Because you ain't felt no thing yet

The Meaning of 'Holding Openness'

There are several subtleties that I will try to bring out now.

1. The title, 'Holding Openness', can be interpreted in two distinct but complementary/mutually inclusive ways (as is true of many of my phrasings). Openness (space) both holds and is held within the dynamic circulation of energy that constitutes natural flow-form. Correspondingly, all natural forms are mutual inclusions of space and energy as receptive and informative presences, neither of which can express their receptive and informative qualities in each other's absence.
2. This 'Holding Openness' contrasts with the 'Holding Closedness' of abstract, 'Whole' ways of thinking, whether reductionist or holist, which by their very nature suffocate rather than open up possibility (in fact if their paradoxical premises were true, there would be no possibility for life, love or existence of anything other than void)
3. So, Nature holds open evolutionary possibility whereas abstract definition precludes it.

4. Moreover, within that holding openness is not a relativistic acceptance of 'anything goes', but a realization that Nature can only include what is actually possible: it cannot include what is actually impossible but imaginable as abstract conception.

5. So Holding Openness brings a discerning awareness of what is naturally true and what is naturally possible, which holds open the possibility of evolution as an indeterminate process, instead of closing down this possibility as a dead end. Holding Openness in our ways of responding individually and collectively to one another and our habitat SUSTAINS life, whereas Holding Closedness consigns life to a dead end.

BOMBSHELLS

The Devastating Mistakes of Abstract Perception

– and how to disarm them through awareness of 'natural inclusion'

By Alan Rayner

PREVIEW

Abstract perceptions of reality always either encase natural phenomena entirely within non-existent boundary limits, or entirely disregard any source of distinction between natural forms and their surroundings and neighbours. Unlike natural boundaries, such as skin, abstract boundaries are simplified, orderly and definitive. They *completely* isolate the insides from the outsides of things and places. Hence they treat Nature either as a *whole* object in itself, or as a collection of whole objects that are divisible into fractional *parts* and separated from one another by variable amounts of space and time. In conventional mathematics, these entities are defined as numerical and geometric *figures* (discrete numbers and shapes) and in conventional language they are defined as *nouns* (discrete subjects and objects). Energetic *actions* of various kinds upon or between these entities are defined as *verbs*. For the sake of convenient calculation, description and argumentation, Nature is frozen into isolated units of space, energy, time and matter within a superimposed frame of reference that does not actually exist. The only envisaged alternative to this categorization is to merge all into formlessness. As the pre-Socratic Greek philosopher, Heraclitus, understood, however, nature is always and only properly imagined as variably *fluid*. Fluidity rules everywhere, and space, time, energy and matter can neither be separated from one another as isolated entities nor united into absolute singularity.

Through our human habit of imposing these abstract boundary limits onto nature, we introduce something fundamentally *anti-natural* into our worldview, which not only steers us away from perceiving true nature, but disrupts and damages our natural neighbourhood in a huge variety of ways. Because this habit has such a tenacious grip on our thinking, it can be called "*abstract fundamentalism*". We adhere to it because we (both in Academia and in society at large) think it is sufficiently useful and correct to "freeze" nature into abstract entities, and to relate with nature as if these entities actually existed. They do not, and the consequences of living and thinking as if they do have brought devastating consequences for us, psychologically, socially and environmentally.

There is a way out of this devastation, without any loss of useful knowledge, through recognising the principle of 'natural inclusion' as the co-evolving flow of energy and space as distinct but mutually inclusive, informative and receptive, presences. Sadly, however, humanity has been habituated to abstract fundamentalism for so long that all of our institutions are built upon it. Whether we speak of engineering, economics, politics, the sciences, or any other field of study or

expertise, the predilection for abstract conceptualization remains firmly in place. We try to solve our problems of living using the same kind of thinking that gave rise to them. But the natural truth remains:-

Abstract fundamentalism, the imposition of definitive discontinuity onto natural continuity, cannot solve the problems of living it causes.

Introduction

Whether we realize it or not, and no matter how well educated we are or aren't, all of us in modern cultures have been brought up to perceive ourselves and the natural world in an abstract way that leads us to make all sorts of basic mistakes in the way we live. These mistakes cause psychological, social and environmental harm, ranging in severity from minor quarrels to mental illness, genocide, global warfare and destruction of our natural habitat.

Oddly, this perception is often described as 'rational', or even 'realistic', so that to question it is assumed to be 'irrational', 'unreasonable', 'unrealistic' and 'emotional'. But if we think about it carefully, it becomes clear that this perception is itself based on fundamentally unrealistic assumptions about ourselves and the natural world. It originates in a kind of idealism that reaches back at least to the times of ancient Greece, and most particularly to the definitive logic of Aristotle and others, which to this day underpins modern science, mathematics and technology. Put very simply, this logic holds that one thing cannot simultaneously be another thing. Correspondingly, all natural forms are treated as discrete objects and subjects separated by rigid boundaries and/or gaps of space. C.S. Lewis described this logic as 'the Whole Philosophy of Hell', in which 'to be' means 'to be in competition'.

It isn't difficult – although it is very unusual – for anyone to recognise the fallacy in definitive logic. We can make a start by asking ourselves 'does this logic correspond with our actual experience of life, and does it make good sense of our experience?' In particular, does the idea that the inside of anything is cut off from its outside relate to our actual experience? What kind of boundary would be needed to distinguish the space inside something from the space surrounding something without itself including space? Such a boundary couldn't have any thickness, because if it did, the space within this thickness would be continuous with the space on either side of it. But anything without any thickness would have no real size or shape: a knife that could cut through space without itself including space – like the 'Subtle Knife' imagined by Philip Pullman in his 'Dark Materials' trilogy – can't exist as a physical reality: it can only exist as an *abstract concept*. That is, we can only *imagine* its existence!

Realistically, we have to recognise that in the natural world, space and whatever *informative presence* that distinguishes the inside from the outside of what we call 'things' are distinct but *mutually inclusive* presences, both of which are needed for these things to be distinguishable from one another and their surroundings. Moreover, we can recognise that such mutual inclusion requires one of these presences – space – to be everywhere, motionless, and without substance, and the informative presence that distinguishes different localities in space, to be in continuous motion (because if it were motionless even momentarily it would reduce to no thickness and hence cease to exist). We may then recognise the latter presence as what physicists call 'energy', which occurs in two distinctive guises in Nature: weightless, 'electromagnetic radiation', and weighty 'gravitational bodies' (matter). But, being founded on the unrealistic definitive logic that treats matter and space as *mutually exclusive*, modern physics gives rise to paradoxical conundrums that obscure this recognition, such as 'wave-particle duality' and 'non-locality'. These conundrums cannot be resolved without changing modern physics' underlying perception of space and boundaries as sources of definitive exclusivity. We need instead to appreciate that natural space and boundaries are mutually inclusive sources of continuous stillness and continuous mobility, respectively. To get more of a 'feel' for what has just been said, imagine drawing a circle with a pencil on a still sheet of paper. You have to move the pencil point around to produce the circle, while not making the pencil point so utterly sharp and hard as to cut a hole in the paper. The circle is formed by a

combination of continuous paper with continuous pencil movement. Time is implicit in this movement, but, like space, cannot be cut into discrete segments or intervals. The circle is a dynamically formed locality *somewhere* in 'place-time' – the energetic inclusion of space in form and form in space.

We can now dispense with our abstract need to define 'things' by recognising how natural space and boundaries actually are and must be *as distinct but mutually inclusive presences*. We can do this by appreciating:

- *Natural space as an intangible presence everywhere that is not a substance but makes the existence of substance possible*
- *Energy as continuous motion that locally in-forms space into bodily presence*

Every 'thing' or 'body' is 100 % space PLUS energy, a dynamic locality *somewhere* in place-time, not *part* space and *part* energy within a completely definable entity or 'whole'.

Now, having recognised the fallacy in the foundations of abstract perception that cuts energy, time and space into discontinuous units, we can begin to recognise the mistakes it leads us to make in our modern everyday lives, and how these mistakes can be remedied through an appreciation of ourselves and all natural forms as 'flow-forms' – 'natural inclusions' of space in energy and energy in space, NOT isolated objects and subjects.

Let's now review these mistakes under a number of generic headings, beginning with the most fundamental:-

Regarding only what is tangible as physically present

This is the mistake upon which the dogma of *materialism* is founded. This seeks to explain natural phenomena in terms of material properties *alone* and so explicitly either *excludes* any kind of immaterial presence from consideration, or treats this presence as if it is actually material. Taken to extremes, it leads to the negation of emotion and the attribution of *value* only to that which can be quantified precisely. All forms of life, including people, become regarded as *machines*, and are treated accordingly as 'performing objects'.

This dogma gathered strength especially during the twentieth century, following upon the widespread acceptance of Darwinian evolution by 'natural' selection ('the preservation of favoured races in the struggle for life') and increasing secularization of society. It was readily assimilated into callous political and economic regimes based on fascism, capitalism and communism and was boosted further by the advent of neo-Darwinian interpretations of social and environmental biology, notably 'selfish gene' theory. Despite being widely caricatured in the science and social fiction literature, e.g. in George Orwell's novel, '1984' and in the stories of 'Dr Who and the Daleks/Cybermen', it is deeply embedded in our social, scientific and educational practice and in the basic premises of both 'reductionism' and 'holism'. It is embedded also in those religious belief systems that divide or conflate the 'material world' from or with the 'spirit world' as independent/unified existences.

The fallacy of materialism lies in the exclusion or conflation of the immaterial presence of space from or with the material presence that couldn't exist or move without it.

Correspondingly, materialism is based on the *abstract concept* that matter can be abstracted from or conflated with space – which is not supported by actual experience and does not make consistent sense.

The remedy for this mistake is as simple and obvious as it is revolutionary: we accept, realistically, that material form is a combination of space and energy *as distinct but mutually inclusive presences*. Correspondingly, we recognise that all natural form is continuously *in flux* as what we could aptly call 'flow-form', and so cannot rigidly be defined into discrete numerical categories. As William Wordsworth recognised:

'In Nature, everything is distinct, yet nothing defined into absolute, independent singleness'.

No sooner do we do this, then we come alive with feeling for ourselves and others as natural, dynamic inclusions of our neighbourhood, not subjects distanced from objects. Emotion is no

longer divorced from reason. We see the source of so many of our modern and global problems in false dichotomy and false conflation – and hence begin to see a way out of their entrapment. New possibilities emerge for our scientific, mathematical, artistic, spiritual, social, psychological and environmental understandings and endeavours.

Let's now look in more detail at some of these possibilities, by reviewing some of the other, inter-related, mistakes that arise from overlooking the vitality of intangible presence.

Mistaking distinction for definition – treating and imposing boundaries as fixed limits

Abstract perception depends on defining boundaries in space and/or time, as absolute demarcations between what is and is not 'the same thing'. This definition allows 'outside influence' either to be ignored or regarded as an external 'force', 'driver' or 'opponent', which must be dominated if it is not to dominate the subject. Einstein's contention that 'the environment is everything that isn't me' epitomises the resultant abstract demarcation of 'self' from 'other' and is encapsulated in Wheeler's summary of 'general relativity' that 'space-time tells matter how to move; matter tells space-time how to curve'. It is also encapsulated in the Darwinian view of life as a 'struggle for existence', and in Hamlet's pondering:-

*'To be or not to be, that is the question: whether 'tis nobler in the mind to suffer the slings and arrows of outrageous fortune, OR, to **take arms against a sea of troubles** and, by **opposing**, end them'.*

It is quite obvious, here, that the definitive exclusion of 'other' sets up an abstract opposition that all-too-readily is translated into **enmity**. Hence the root of human conflict and misunderstanding is embedded in abstract definition – the *objectification* of what is deemed to be outside the subject. As Michael Polanyi (1958) put it:

"For once men have been made to realize the crippling mutilations imposed by an objectivist framework—once the veil of ambiguities covering up these mutilations has been definitely dissolved—many fresh minds will turn to the task of reinterpreting the world as it is, and as it then once more will be seen to be."

But the definitive placement of ourselves and others in an objective space/time frame is something we have all been taught to do on an everyday basis. We do it in our language, when we define 'things' as 'nouns' that do things verbally to other things. We do it in our mathematics when we define numerical and geometrical figures as discrete 'parts' and 'wholes' (fractions and integers, segments and spheres etc). We do it in abstract logic that excludes the middle possibility between alternative propositions. We do it in our science when we confine our experiments within discrete containers. We do it in politics when we divide into parties that oppose each other and submit themselves to elections in which majorities gain mandates, undemocratically to overrule minorities. We do it in religion that divides people into exclusive sectors and factions. We do it in educational systems that divide themselves up into discrete disciplines and select 'the best' while failing 'the rest'. We do it in 'sport' and every form of 'competition'. We do it in Art that divides itself into 'isms'. We do it most terribly in warfare and genocide. Basically we do it whenever we impose unnatural discontinuity upon what is naturally continuous and treat this discontinuity as real. As the nursery rhyme discloses: whenever the natural spatial and temporal continuity of Humpty Dumpty is shattered, all the King's horses and all the King's men, cannot put Humpty together again. *The fallacy of defining boundaries as fixed limits of space, time, energy and matter resides in the fact that natural boundaries never are or can be definitive. Natural space cannot be cut into separate pieces. Neither can natural movement actually be segregated into discrete time frames (as per the 'freeze-frames' of a cine film). Natural boundaries are continuously in flux and freely permeable to space, and so dynamically distinguish, without isolating, insides from outsides.* The remedy for this fallacy is as simple and obvious as it is revolutionary. Accept natural space and boundaries to be as they are – continuous and continuously dynamic; don't try to force them physically or mentally to be as they aren't.

For example:-

As a practical, experience-based approach to bringing up children lovingly and protectively, apply boundaries as dynamic transition zones rather than hard and fast rules. These boundaries can change and become more complex as the child gains experience. While young children may need to be told to “finish dinner before starting to watch TV”, this rule can evolve for older children into more flexible guidance regarding good nutrition, courtesy toward others, and spending time wisely. Such use of experience-based guidelines that can soften and harden, open up and close down as appropriate to circumstances, in place of unrealistically inflexible and impermeable rules and regulations is not an invitation to utter unruliness. A tree with no bark is as unable to thrive as a tree with cast-iron bark. By the same token, a child growing up with no constraining influence is as lost and vulnerable as a child subject to iron-discipline is stultified and liable either to rebel or inflict the same oppression on those that it comes to exert power over. On the other hand, a child brought up lovingly and flexibly *learns* how to care for its self, its neighbours and its natural neighbourhood, in variable and evolving conditions.

Mistaking quantity for quality

That ‘more is better’ is a widespread assumption applied to such notions as ‘productivity’, ‘efficiency’, ‘evolutionary fitness’, ‘economic growth’, ‘ability’, ‘happiness’ and ‘health’. Conversely, ‘less’ is considered ‘better’ when applied to ‘unproductivity’, ‘inefficiency’, ‘death’, ‘economic recession’, ‘disability’, ‘sadness’ and ‘disease’. Implicit in such assumptions is the further assumption that all natural occurrences can be quantified in terms of exact and equivalent numerical units (i.e. definitive numbers).

A salient example is the utilitarian ethical doctrine that judges the value of actions in terms of their capacity to produce the greatest happiness for the greatest number of people. This doctrine actually opens up some very problematic notions, e.g. the idea that ‘the end’ (in this case ‘the greatest happiness in the most people’) justifies the ‘means’ (how to achieve that ‘end’). Such a notion enables nastiness to be justified if it yields goodness in the end. It combined with Social Darwinian racial and eugenic favouritism to underpin the Nazis’ ‘final solution’ of exterminating a scapegoated minority objectified as ‘other than us’.

Here we are obliged to ask questions like, ‘what do you mean by the greatest number?’; ‘Are you talking about the greatest number now, or at some future time, in which case, when is that?’ ‘Is each of the numbers you are considering truly of equivalent size and quality?’

The fallacy of regarding quantity as a measure of quality resides in the fact that distinctive natural identities are dynamically bounded and so are neither definitively discrete entities in themselves, nor confined to discrete locations in space and/or time.

Once again, the fallacy arises in imposing unnatural discontinuity (i.e. definition) on what is naturally continuous or continuously dynamic. The remedy is as simple and obvious as it is revolutionary: accept natural numerical identities to be as they are – local energetic inclusions of continuous (i.e. infinite) space. While this does not alter the way simple numerical calculations of addition, subtraction, division and multiplication are done, it does radically change understanding of what the results of these calculations – and the numbers themselves – actually mean. At the heart of this new understanding is appreciation of Wordsworth’s recognition that ‘nothing in Nature can be defined into absolute independent singleness’. In other words there is no such thing in Nature as ‘One Alone’ or ‘All One’. There is only ‘one’ as a dynamic inclusion of intangible space within and intangible space all around. To put it another way, rather than being a rigid figure set apart from the intangibility of zero and infinity, natural singleness is a dynamic inclusion of zero as an intangible point of space infinitely deep within its core and infinite intangible space all around. Infinity and zero are qualities of space, not quantities of matter.

Natural ‘oneness’ is therefore indefinable as a figure apart from space, a ‘material unit’, but is instead a combination of tangible and intangible presence. Natural oneness is a fluid quality of dynamic local distinctiveness within and as an inclusion of infinite space. It can vary in shape and scale from regularly spherical to irregularly branched, and from subatomic to galactic. It can expand

and contract and it can differentiate from and integrate with others in diverse combinations and re-combinations. ‘Twoness’, as a coupling of the boundaries of two ones in common space, is not the same as two individual ones with distinctive boundaries, as is evident from the fact that 2×2 is not the same as $1 \times 1 + 1 \times 1$. This simple fact, when its iterative implications were appreciated, gave rise as recently as the 1960s to the development of ‘non-linear dynamical systems theory’ as a radical departure from the familiar linear mathematical models of natural dynamics used, for example, in Newton’s mechanics. Even so, its deeper significance regarding the fundamental quality of natural flow-form escapes notice, so long as the abstract convention of treating numerical and geometric figures as definitively bounded entities remains in place.

The fact that what I have just written may sound abstruse is testament to the capacity of successive generations of doctrinaire mathematical teaching and theorizing to obscure the central fallacy embedded in its foundations and establish itself as an unquestionable pillar of exactitude in the minds of the public. This central fallacy was exposed as long ago as 1985, by Nigerian mathematician, Lere Shakunle, who, as a result, formulated a radical new methodology, which he called ‘Transfigural Mathematics’.

Meanwhile, this fallacy continues to affect us every day, and to be exploited by political and commercial profiteering and obfuscation, in a huge variety of ways.

For example:-

The unwary modern supermarket-shopper is lured into making unnecessary and unsatisfactory purchases by a plethora of ‘special offers’ and ‘bargains’, all based on the illusion that more product and/or less cost are necessarily ‘better’, while obscuring hidden cost and lack of quality. The wise shopper knows how to see through and avoid these temptations; the unwary shopper falls for them. Those ‘two for the price of one’ purchases prove not to be such ‘great value for money’ when we get them home and realize that we haven’t got the storage room for them, that we can’t possibly consume them before their ‘use by’ date without getting fat, and that they’ve flown umpteen air miles and don’t taste so good anyway. Need I say *more*?

Overlooking context

As predatory primates with grasping hands, binocular vision and an inability to digest grass, human beings are predisposed to *focus* on whatever grabs their attention and *ignore* what surrounds this. If we were rabbits, surrounded by swathes of delicious grass and with eyes on the sides of our heads, our predisposition would literally be more circumspect and wary, while less prone to place ourselves and other locally distinct identities at the centre of our attention.

This may help to explain why we are so cognitively predisposed to focus solely on individual ‘figures’ while losing sight of the ‘ground’ or ‘spatial context’ within and as a dynamic inclusion of which those figures are situated. This may suit our catching, grasping lifestyle in many ways, but when it comes to acting wisely in relation to our natural neighbourhood, it pays to be more circumspect – to remind ourselves, or be reminded, to include ourselves and others in what is all around, within us and throughout us. Otherwise we fall into the trap of abstract perception that leads us to isolate ourselves and others from our natural environment as definitive subjects and objects.

The fallacy of excluding context from consideration resides in the fact that no natural form or figure can be isolated from what it inescapably includes and is included in.

When unaware of this fallacy, it is a short step to profound misunderstanding and the development of abusive relationships with our neighbours and our neighbourhood. We get ‘tunnel vision’ and ‘wall ourselves in’ to false perceptions of absolute freedom and security, which can have catastrophic consequences.

For example:-

Back in the supermarket, armed with steely shopping trolley, our focus on the bargain buy over there, we take aim and charge, failing to notice the other shopper about to cut across our path, and collide. Meanwhile, someone else gets there first. Frustration leads to rage and we get caught up in an exchange of accusations with the other shopper. Similar situations occur every day on our roads,

all of which could be avoided with a little more circumspection and empathy for the other sharing our space.

Mistaking consequence for cause

Talking about collisions, the perception of Nature as a set of inert, hard-lined objects separated from one another by variable gaps of space led Isaac Newton to formulate his 'Laws of Motion' in terms of bodies moving and interacting by means of 'forces' imposed upon them. This is related to the familiar idea that whatever happens must have a cause. When you think about it, this also implies that without some kind of intervention, Nature would not change. So, the default position in this view of Nature is stasis – changelessness. If 'something' happens, 'something else' must have made it happen.

This kind of thinking leads us to look for causal agencies for whatever happens, and for millennia an enormous amount of philosophical enquiry has been devoted this search. One of the frustrating things about this enquiry is, however, that it leads to what is known as an 'infinite regress' because every cause that is identified must itself be caused by yet another causal agency. Every child knows how to taunt their parents by repeatedly asking the question 'why?' In the end some recourse to 'ultimate Authority' or 'ultimate cause' is made: 'because I say so; because God/Nature made things that way!'

The temptation to put a stop to infinite regress by singling out a particular local agency as 'prime cause' or 'prime mover' is one way in which what is actually the outcome of some deeper reality – or misconception of reality – becomes mistaken for the originator of that reality. For example, the 'source' of a river may be traced back along the path of the river to the tip of one of its tributaries. In this way, a local spring in the Cotswold Hills is often spoken of as the source of the great River Thames that flows through the City of London and out into the North Sea. But we have only to question, 'where does this spring arise from?', for our enquiry to take us on an exploration into the 'water cycle', and beyond, ultimately to everywhere within the infinite expanse of what we call 'the cosmos'.

Ironically it is this temptation to isolate and believe in an ultimate, independent, singular cause for all that happens, which ultimately causes all the mistakes of abstract perception listed in this essay. Even supposedly 'evidence-based' theories of origin and causation can nonetheless be undermined by false assumptions that are not consistent with evidence. A good historical example is the Ptolemaic representation of the Universe, based on actual evidence of the apparent movement of stars and planets, yet founded on the belief that the Earth was fixed in the centre of the solar system. By the same token, all modern scientific theories of biological and cosmological evolution are based on actual observations (e.g. fossil record; red shift of galaxies) but undermined by the abstract mathematical and philosophical assumption of a paradoxically definitive starting point/process in which material presence is isolated from or conflated with spatial presence.

The fallacy here resides in the assumption that some singular entity or event had to get things started from an initial default position of utter incoherence ('randomness', 'entropy', 'anarchic disorder' or 'chaos') or utter formlessness in which space and energy are mutually exclusive or indistinguishable.

If, however, it is recognised that all natural, distinguishable forms arise from the continuous flow of energy in space and space in energy, then the assumptions of randomness or formlessness and singular intervention in the first place must be false. Hence, it becomes possible to move on from thinking simplistically in terms of interminable, interlinked chains of cause and consequence where 'one thing leads to another', to a more contextually aware recognition that all natural occurrences arise within each other's simultaneous mutual influence.

For example:-

What *really* caused the collision in the supermarket? Was it one or other of the shoppers? Was it the tempting bargain? Was it the supermarket chain that puts profit, before people, before environment?

Was it capitalism? Was it money? Was it possessiveness? Was it mistrust? Was it materialism? Was it the assumption that material bodies can be independent from their contextual space? Ah!

Attributing too much or too little responsibility to self or others for fortune and misfortune – the claim, blame and shame game

With the recognition that there can be no such thing as singular causation, comes the awareness that no single person can ever be solely responsible for whatever happens, including their own behaviour. Modern human culture is, however, full of people who seek to claim full credit for whatever ‘good’ that happens and ready to attribute or accept blame for whatever ‘bad’ that happens to others or upon themselves.

To claim full credit for good outcomes and behaviour is a source of ‘feel good’ exultation, and especially characteristic of people with aspirations to political leadership and/or winning various kinds of contests for money, fame and glory. Those same people are as ready to attribute blame to others as they are unready to accept blame themselves – a condition sometimes referred to as ‘passing the buck’. Meanwhile, those who accept blame or are blamed suffer ‘feel bad’ emotions of guilt, shame, deprivation and demoralization as social outcasts.

The fallacy here resides in the assumption that anyone can be free from the influence and support or antipathy of their social context and natural neighbourhood.

Whatever we do may be wilful, but is never entirely the product of our independent ‘free will’. It therefore makes natural sense to accept a fair share of responsibility for whatever happens, and to admit to making mistakes – even and especially when these mistakes are deeply socially embedded – and to seek to avoid repeating these if possible. It also makes sense to forgive ourselves and others for mistakes we make, while learning from them: not to admit to making mistakes is an even bigger mistake – the mistake of arrogance. But it does not make natural sense either to accept sole responsibility or to deny any responsibility for whatever happens within our vicinity as living creatures.

For example

That altercation in the supermarket could so easily have been avoided if:-

1. Each shopper had been more circumspect and aware of one another’s dynamic locality in the first place..

Or, failing that..

2. Admitting and forgiving each other’s mistakes, through an empathic appreciation of the situation that gave rise to them, and, maybe, even, having a good laugh about it.

Mistaking Human Rights for Human Needs

According to the United States Declaration of Independence:-

“We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the pursuit of Happiness”

This statement continues to this day to underpin U.S. Governmental policy, both at home and abroad. It is a source of immense national pride and belief in the moral and technological prowess of the U.S as a dutiful and benevolent ‘World Leader’. Its very wording defies anyone to question its validity.

And yet, if we were, without prejudice, openly and honestly to question the grounds on which this declaration is held to be a statement of self-evident truth, we might find ourselves surprised and troubled by our answers. Bear in mind, here, the historical context that the ‘Founding Fathers’ of the U.S. Constitution were not only dissociating themselves from their British origins, but also very strongly influenced by the abstract, rationalistic worldview of the Enlightenment. Moreover, the principal author, Thomas Jefferson, inherited and owned many slaves, and freed only few of them, in spite of his stated opposition to slavery.

When we examine the statement carefully, we have to recognise that there is no *actual* evidence to support any of its contentions. In reality it is a product of abstract single-mindedness and idealism, which bears no relation to how we self-evidently are as living inhabitants of the natural world: i.e. variable and energetically dependent on our neighbourhood. And as a product of abstract thinking, it is a source of all the mistakes described in this essay.

Notice especially, that at the core of the declaration is the notion of an 'inalienable Human Right'. What does this really mean? What could it be taken to imply?

The very notion of an 'inalienable Right' brings with it a sense of irremovable *self-entitlement* to how things must be as a *given* endowment, privilege or possession that can be expected, demanded and taken for granted. Now let's take a look at what is being expected, demanded and taken for granted: Life, Liberty and the pursuit of Happiness. Can anyone honestly and realistically expect these as a given? Moreover, in the case of Liberty and the pursuit of Happiness, are these actually desirable? Freedom from oppression is one thing; freedom to do as one pleases, without consideration for neighbours or neighbourhood is quite another. Desiring happiness is one thing, hedonistic pursuit of happiness at all costs is quite another.

A strong sense of self-entitlement combined with lack of empathy for others is recognised nowadays as a widespread and intractable psychological condition called *narcissism*. It brings with it a selfish, intolerant, domineering, exploitative and vindictive attitude of mind that is angered when it doesn't receive what it expects, by way of licence to possess and do what it pleases, and seeks revenge on whatever it deems to oppose it. Commonly it hides these traits, both from itself and others, behind a hypocritical façade of benevolence and rectitude that in truth is no more and no less than arrogant paternalism, a 'living contradiction of itself'.

Many, if not most of us in modern cultures will not have difficulty recognising narcissistic traits in people and indeed in Governments that we encounter: if we're really honest, we'll recognise them in ourselves. The sad fact is that narcissism has become a prevalent world-wide mental condition, rooted in abstract single-mindedness.

The fallacy in the core of narcissism resides in the biological fact that we are not born as fully formed, identical entities into an homogenous environmental and social context that belongs to us alone.

Realistically, life is not an inalienable right; life is a gift of natural energy flow that we receive, sustain and pass on in the goodness of time. We are born as variable offspring from sexual union between male and female parents and we can never be free from dependence on our natural neighbourhood for the supplies of energy that sustain us as living, breathing, loving, feeding, urinating, defecating, sweating, mobile, learning, maturing, ageing creatures from conception to expiration. Like all living creatures, we are vulnerable, needful creatures, doing what we need to do to sustain, comfort and protect ourselves and our offspring. This is not selfishness, it is necessity. If we can't get what we need to sustain, comfort and protect ourselves, we suffer and die. When we appreciate that this is true, we recognise that all forms of life on Earth live in each other's neighbourhood, fulfilling our needs as best we can. With this appreciation, empathic fellow-feeling grows along with an awareness of how we can care for and help one another and our neighbourhood to fulfil our needs. In caring for our natural neighbourhood, we care for ourselves and our neighbours in a natural communion of varied life.

So, why pretend otherwise? What good does our sense of self-entitlement truly serve? What kinds of mistakes does it lead us to make in our everyday lives?

For example:-

In our workplace, does a domineering boss who neglects everyone's needs including his or her own, help us to be happy and fruitfully productive, or make us resentful, fearful and hesitant? You might think that question's a 'no-brainer'! But the sad truth is how many 'bosses', by their very nature only become bosses by dint of their sense of entitlement to power. We are obliged to put up with them when we are prevented – or prevent ourselves – from speaking the truth that uncovers the flaw in that sense of entitlement's underlying abstract logic.

Crime and Punishment

“Cobra found guilty of biting man sentenced to death by lethal injection”

Indian Summary Execution Times, October 31st 2066

Where abstract conceptions of Human Rights and Wrongs supersede empathic awareness of natural needs, the ground is readied for those two great misadventures of single-mindedness that so distressingly curtail human life, liberty and happiness: Crime and Punishment.

Both the concept of Crime and the idea that crime should not only be prevented but *punished*, hence adding damage to perpetrator to damage to victim, arises from the abstract notion of human entitlement to ownership of property. Any infringement of that entitlement is regarded as a crime.

By the same token, a strong sense of self-entitlement may itself be a motive for committing a crime – literally taking the liberty of depriving others of what they need and may have strived hard for.

On the other hand, what is perceived by a property-owner as a crime committed against them, may be motivated by the natural need of the perpetrator. An impoverished poacher may ensnare a rabbit to feed his family. To punish someone for desperately trying to fulfil his or her needs is not a charitable action, to put it mildly. Equally, to treat as personal property what has been taken from others by force – as in colonialism – might well itself be considered criminal: ‘property is theft’.

Who is perpetrator and who is victim in such situations may not be easy to judge. Either way:- *The fallacy underlying the concept of crime and the associated desire to punish miscreants is the belief that any individual or group is entitled to sole ownership of personal property, given the interdependence and indefinable dynamic boundaries of natural living systems.*

Through appreciating that life itself is a gift of natural energy flow, to be sustained and passed on in the goodness of time, the motive for crime and punishment is removed and replaced by a joy in caring for self, neighbours and neighbourhood, and pooling resources and abilities, as in natural ecosystems. This doesn’t remove our needs to feed, comfort and protect our self-identities, as are expressed in natural patterns of territoriality, home-making and consumption of energy sources, but it does provide us with a means of appreciating and respecting instead of abusing our own and others’ needs. Where such appreciation and respect is lacking, then we may have to resort to aggressive and/or restrictive means of preventing abuse, like a cat that hisses and lashes out at someone pulling its tail, or a robin fending off transgressors into its territory. But the intention of such responses needs to be recognised as protective, not vindictive.

For example:-

Your home is burgled and trashed. Some pieces of artwork that you have been working on for months are destroyed, along with some precious porcelain left to you by your dead mother. The young man responsible is arrested and brought to trial. It turns out that he comes from a broken home and has been abused by his father. He has become addicted to heroin to ease his pain, and has burgled your home in order to pay dealers for the illicit substance that he craves. Which, in the long run would do most to ease your distress?

1. The young man receives a prison sentence, and is described by the Judge as an irresponsible person who has turned to evil in order to satisfy his illicit craving. While in prison he is abused by other inmates, and upon release reoffends within a week. Meanwhile, you make a successful claim on your house contents insurance policy, while recognising that what you have lost is irreplaceable.
2. The young man’s extenuating circumstances are taken into account and he is sent at taxpayers’ expense to a rehabilitation centre, where he is treated kindly and with respect. A year later, he appears on your doorstep bearing a big bunch of flowers and saying that although he recognises sadly that he can never repair the damage his actions have caused, the kindness and understanding he has received have turned his life around, and he is so very grateful.

Mistaking predictability for proof

A feature of the criminal justice system, based as it is on abstract notions of cause and consequence, ‘whole truth’ and free agency, is the idea that ‘guilt’ can be ‘proved beyond a reasonable doubt’. Sadly, there are a great many tragic examples of ‘miscarriages of justice’ that do cast a lot of

reasonable doubt on this idea. These miscarriages are partly the result of the very dubious belief that truth can be revealed through the opposing arguments of prosecution and defence, the outcome of which, in terms of a simplistic 'guilty or not guilty' verdict is liable to be decided by whichever case succeeds in using the most persuasive rhetoric, and makes best use of or casts most doubt upon the available evidence.

Similar notions that truth can be revealed through opposing argument occur in adversarial politics and abstract scientific theorizing. Crucial to the success or defeat of the opposing arguments or schools of thought is which of these appears to be the better predictor of future happenings and/or yields the most desirable future. A politician or scientist who expresses uncertainty about the outcome of their policy or theory in practice is generally considered 'weak' or 'woolly'-minded, and so not to be trusted. The assumption arising from abstract logic is that truth can be proved definitively, that any statement concerning reality is either true or false and that a true statement will provide accurate predictions when put to the test. Political and scientific credibility has come to depend on the ability to make statements (in science these are known as hypotheses) that provide accurate predictions, and accurate predictions are considered tantamount to proof. Any politician or scientist considered to be worth his or her salt is expected to be able to 'prove it' and 'answer, yes or no'. To be unable to respond to that challenge in definitive terms is taken as evidence of not knowing what they are talking about.

The fallacy in assuming that truth can be proved definitively arises from the fact that there are no definitive limits in Nature, because natural space is continuous and natural boundaries are continuously dynamic, as can be inferred from the evidence that natural forms are distinguishable from their surroundings and capable of movement. There is no such entity in Nature as 'the whole truth and nothing but the truth'

So, actually, it is the politician or scientist who refuses to provide definitive proofs, answers and predictions who is being realistic, not the one who feigns certainty in order to secure credibility and popularity. As was demonstrated mathematically in 1931 by Kurt Gödel, definitive proof is only possible within definitive limits, and so all such proofs are self-referential, self-fulfilling prophecies. You might have thought that this was obvious, as indeed it is, but the mathematical argument was tortuous because of the definitive assumptions pre-embedded in conventional arithmetic. In effect the mathematical argument was an extension of an ancient, well-known logical paradox, known as the 'Cretan Liar paradox', in which a citizen of Crete declares definitively that 'all Cretans are liars'. This declaration gives rise to what has been called 'a strange loop' of circular argument and self-contradiction.

Extraordinarily, self-fulfilling prophecy continues virtually unabated and unquestioned to this day as a basis for scientific and political rationalization, sometimes alluded to as 'in the box thinking' (i.e. thinking that is restricted within definitive limits). It entails two distinctive forms of 'reasoning', deductive and inductive. Deductive reasoning is based on arguing from what is defined as a general truth to particular manifestations of that truth. Inductive reasoning is based on arguing from particular manifestations to a general truth. The inductive procedure goes like this:- (1) Define the frame of reference that you going to restrict your attention to; (2) observe what occurs within that frame of reference; (3) devise a general hypothetical statement that is true for all those occurrences (4) test the ability of that statement to predict further occurrences within that frame of reference; (5) consider your statement to be true as a general rule (i.e. a theory) until or unless an exception to it is encountered (whence the theory becomes 'falsified', as philosopher of science, Karl Popper put it, notwithstanding the fact that it already based on a false premise). The deductive procedure goes like this:- (1) Define the frame of reference that you are going to restrict your attention to; (2) deduce what the outcome will be IF contents of that frame of reference are treated in accordance with a particular rule; (3) confirm that this treatment invariably has the predicted outcome; (4) consider the rule to be proved.

The deductive approach alone provides the basis for mathematical proofs, such as the proof of Pythagoras's theorem that the square of the hypotenuse of a right-angled triangle with straight sides on a flat surface is equal to the sum of the squares of the other two sides. Here the proof relates only

to an abstract mental construct and so no reference need be made to actual physical occurrences in Nature. The mathematics is 'pure': independent of natural reality, and so need take no account of uncertainty. As Einstein famously put it:

*"... as far as the propositions of mathematics refer to **reality**, they are not certain; and as far as they are certain, they do not refer to **reality**."*

Science on the other hand is at least supposed to be concerned with reality and actual observations. In what has become known as the 'scientific method', a combination of induction from actual observations, and deduction from the conclusions drawn from these observations is used to discover and confirm the underlying physical 'Laws of Nature' that are assumed must exist and, once revealed, will enable accurate predictions to be made. Arising as they do from pre-defined frames of reference that exclude whatever resides outside them from influencing what resides inside them, these laws generally become expressed in such a way as to make it seem foolhardy to question them. It needs always to be remembered, however, that as a result of the particular combination of theory and practice (known as 'praxis') from which they originate, such laws themselves are abstractions that don't necessarily apply to the natural world as it actually is – only to how it has been pre-defined. Not only is the method itself prejudiced by this pre-definition, but the pressure on scientists to demonstrate proof of their theories, can lead them to ignore or force-fit findings that don't support their suppositions.

The trouble is that these limitations on abstract scientific praxis are rarely admitted or even recognised by most scientists, and the general public is generally unaware of them. No effort is made to attune the praxis to the reality of nature – as can be done through unprejudiced observation of natural space and boundaries combined with *inferential* reasoning from actual phenomena, free from definitive limits.

The way is then open for abstract science to be used and abused as a source of false authority instead of valuing truly natural science as a source of real knowledge of how we actually are in the world as it actually is and evolves.

For example:-

Instead of being taught to recognise the difference between those phenomena that can be predicted with reasonable certainty and that cannot – we are led to expect science of any true worth to predict all occurrences with complete assurance. Not appreciating the difference between slowly evolving, highly repetitive behaviour and turbulent fluids, we may disparage weather forecasters for 'not getting it right' even within a 24 hour period when astronomers can predict the movements of moons and planets in the solar system with extreme accuracy even hundreds of years in advance. Without this kind of appreciation, we find ourselves utterly lost and unsure who or what to believe, when faced with many of the environmental, social and psychological challenges of modern life. Who or what do we believe in regard to climate change, genetic modification, fracking and badger-culling when scientists and politicians can't be honest with us or themselves about what can and cannot be predicted?

Mistaking competitive success for excellence

Competition is an invention of abstract perception, in which individuals or groups consume energy within a definitive arena of space and time, in order to deprive others of status and resources. In leading either to the defeat of one (the 'loser') by the other (the 'winner'), or to mutual stalemate, it precludes any possibility of co-creativity and so is ultimately self-defeating. In itself, competition therefore impedes rather than drives evolutionary innovation and diversification. To suppose otherwise is a huge mistake. In human communities, competition is a source of enormous waste and misery, not flourishing. Competitive 'triumph' is disaster in disguise, truly an impostor, which has nothing to do with the reality of evolution in natural living communities. Competitive success indicates excellence only within pre-defined limits and offers no guarantee of continuation when the goalposts change. Evolution is a learning process of cumulative transformation, not running ever faster on the same spot like a demented Red Queen. History teaches this lesson repeatedly: what

serves well in one context ceases to do so in another – light bulbs supersede candles as we learn how to channel electricity through copper wiring.

The fallacy of seeking competitive success resides in the fact that competition only occurs within abstract definitive limits that do not occur naturally: to impose such limits on our own and others' lives is ultimately a source of profound limitation and loss, not enhancement.

So, if competition – and hence Darwinian selection – impedes evolutionary possibility, what naturally opens it up? The answer is as simple and obvious as it is revolutionary: the openness to possibility that is implicit in natural fluidity!

There is a radical difference in attitude of mind between that which desires to 'win', and that which desires to do as well as it possibly can in the circumstances it finds itself in. The former is ruthless in its treatment of what are considered to be its opponents, and is ready to use any means it can to serve its purpose: 'all's fair in love and war' is its maxim. There is no place in its armoury for contemplation of its actual situation in relation to its neighbourhood, beyond its determination to predominate. The latter, on the other hand, is deeply aware of its actual situation and considerate of the needs and complementary skills of itself and others within its neighbourhood, which it seeks to optimize as a *participant* or 'team player' making its own and benefiting from others' contributions to 'the common good'. Where 'the common good' is perceived, however, to be the defeat of 'the common enemy', these participatory and domineering attitudes of mind can come into direct conflict.

For example:- In team sports like football, the interests of players in individual success can conflict with those of their own as well as the 'other team', especially when expectations are high and national and international glory is at stake, as in competitions like the 'World Cup'. The resulting spectacle can be as unpleasant as it can be fascinating, as 'professional fouls' are committed, tempers flare, cheating is rife, goal-scoring opportunities are squandered through 'selfishness', and scorers exult in displays of insulting and arrogant behaviour, all roared on by a baying, partisan crowd. Ultimately, the delight of the winning team and its fans is matched only by the misery and humiliation of the losers, with the result often depending on the tiniest twist of fortune. It is like watching a war, and that of course is just what it is, in microcosm.

On the other hand, when taking part, not winning, really is the principle motivation, then team sports can truly be joyous, where players delight in one another's skills and learning through each other's 'friendly rivalry'. Here we might notice that whereas competition to win or lose within a defined arena is an abstract invention, rivalry for resources within energetically open ecosystems is very much a natural phenomenon, which gives rise to various examples of territorial behaviour, and can and does give rise to evolutionary innovation. Such rivalry need not even be between what are conventionally regarded as living systems. Adjacent river drainage basins for example, co-create ridges called watersheds where they meet, and can manifest all sorts of phenomena such as river capture, which, were they living organisms might be interpreted as the result of intentional conflict.

Mistaking speed for efficiency

Competition in modern human societies and organizations is closely related to another source of enormous stress and wastage of energy: *busyness within a restrictive time frame*. This arises from the abstract notion that superiority of performance increases as the time taken to complete an action decreases. A common expression of this is 'time is money', whereby time is regarded as a commodity equivalent to that other great abstraction from natural energy flow that has become the predominant motivating force for most people in modern cultures.

The fallacy here resides in the fact that time as an abstract commodity independent of space and energy does not actually exist.

Our natural perception of time arises from our implicit, if not explicit awareness of living, like the spinning, sun-orbiting planet we inhabit, as dynamic rotational energetic inclusions of place-time – the continuous *circulation* of natural energy flow, experiencing natural rhythms and the alternation between daytime and night-time.

The abstract perception of time as a measurable commodity, divisible into discrete units or intervals (seconds, minutes, years etc) arises as a derivation from the flattening out of this circulation into a straight line. The resultant 'arrow of time', as a 'fourth dimension', stretches from past into future via an eternally shifting definitive cut-off point between the two, which is called 'the present'. The use of this arrow of time as a baseline against which to measure performance always begins with this non-existent cut-off point in the present and ends with another non-existent cut-off point 'sometime and somewhere in the future that has yet to arrive'.

Newton's 'Laws of Motion' and associated invention of calculus are based on this flattening out or 'linearization' of continuous dynamic curvature into local flat-lines. These local flat-lines, known as 'infinitesimals', provide a useful way of calculating (but in reality only simulating by approximation) the trajectories of what are treated as if they are independent objects forced into motion by externalized agency. As a calculating tool, this is unproblematic. The problems begin when we start treating ourselves and others as if we really are such independent objects.

Abstract perceptions of time rule out rotational liveliness, operating over spatial scales from microcosm to macrocosm, into the local deadlines and external force that we have allowed to overrule our natural lives. Instead of simply using 'clock-time' as a convenient source of guidance, helping us to plan meetings, for example, we find ourselves trying to pack as much as we can into a restrictive schedule between enforced deadlines. We believe that this makes the most productive and efficient use of our time, especially our time in what we think of as 'the workplace'. In truth, however, it is soul-destroying, wasteful and counter-creative, through its denial of our needs as living, loving creatures –inhabitants of 'place-time', not discontinuous space, time and energy.

For example:-

We are currently being required to minimize greenhouse emissions by using long-life, energy saving light bulbs and reduced power vacuum cleaners, at the same time that we are being urged to 'cut travel times' and so increase our commercial productivity and competitive advantage by being able to journey further, faster and more often between sources of supply and demand. Time devoted to busyness is increased while time for reflection and enjoyment of life is eroded, resulting in a huge shift in our 'work/life balance'. And yet, we all know, don't we, that travelling fast wastes fuel. A 100m sprinter hasn't the stamina to run a marathon. And we all recognise, don't we, that being too busy to think about what we're doing – and whether it's really needed – leads us to work unnecessarily hard doing things that aren't necessary, and so working even harder to compensate for the wasted effort, in an exhausting vicious cycle? Saving time costs energy – it's as simple as that. Time-efficiency is not the same as energy efficiency. All naturally sustainable forms of life on Earth live in accordance with their spatial scale of organization and the availability of energy as their natural currency. A mouse has a much higher metabolic rate and shorter life span than an elephant, but in its own terms lives just as long. Only *Homo sapiens* tries to oppose this natural principle.

Expecting too much and imagining too little

Through striving for happiness and competitive success, busying ourselves within restrictive time frames and accepting more than our fair share of responsibility we expect too much of and for ourselves as perishable creatures. Even those few of us who appear to fulfil our expectations sooner or later are reminded of life and death's realities, and discover that what we may have gained at others' cost does not bring true contentment, especially if it has been gained dishonestly. At the same time, the definitive restrictions we impose upon ourselves and others lives, in order to meet our expectations can greatly narrow our horizons, so that we 'miss out' on what life truly has to offer us if we open ourselves up to it.

The fallacy of expecting too much and imagining too little arises from failing to make allowances for our natural situation as local dynamic inhabitants of an ever-changing spatial and energetic context, which is not predictable in the long run.

By failing to make these allowances, we find ourselves chasing impossible dreams while overlooking the reality of the here and now, along with the opportunities it brings for new discoveries and living, loving and being loved well.

For example:-

What are ironically described as 'Reality TV' shows thrive on the promise of seeming to give contestants the opportunity to 'live the dream'. The true reality is that very few actually 'succeed' in surviving the stringent selection process that whittles down the candidates and the emotional devastation of those who don't make it is awful to witness. It is like watching a donkey follow a dangling carrot while all sorts of delights along the wayside are passed by

Mistaking difference for opposition

The notion that what is not the same as me or us must be in competition with me or us is a very common source of human conflict, and has become deeply embedded in neo-Darwinian notions of evolution by natural selection, most notably the idea of 'the selfish gene' popularized by Richard Dawkins. 'To agree to differ' is therefore regarded, by many, as a failure to achieve 'consensus', not a resolution, and it is widely thought that a great many human social problems would 'disappear' if only our differences could be removed. Totalitarian regimes of all kinds seek conformity through uniformity, and may even enforce the wearing of uniforms to signify the absence of difference amongst their membership.

The fallacy in this is that Nature itself is dynamic and variable, not an eternal status quo, so that difference is vital to the evolutionary sustainability of natural communities, not its antithesis.

Uniform social organizations are hence inflexible and unable to tolerate or give rise to the complementary qualities needed to sustain viability in changeable circumstances. They are oppressive regimes that require iron discipline, usually imposed by zealous policing and military force to sustain their unnatural order. Sooner or later, they collapse, but not before they have inflicted enormous suffering on themselves and their neighbours.

For example:-

The brutal nationalistic, racist, communist and fascist regimes of recent and current human history are only the most extreme manifestations of an intransigent attitude of mind that permeates throughout modern human groupings, from local clubs, schools and churches, to national and international institutions and nation states.

Mistaking individuality for independence

Gaining independence is often regarded as the most desirable objective of 'growing up', whether from infants into adults or from local geographical regions into 'fully fledged' nations, complete with their own laws, currencies, governments and borders. We desire to 'stand on our own two feet' and to 'do it my way' and be 'self-sufficient'. We call the process of becoming independent 'individuation' or 'maturation'. We speak of the 'Struggle for Independence' in much the same way as we speak of the 'Struggle for Existence', and human history is filled with the painful record of 'Wars of Independence'. We desire to be different and yet, at the same time, we live in cultures intolerant of difference that call us to 'conform to a norm'. Most perversely, in individualistic cultures, we find ourselves required to conform to the norm of being individually different and self-sufficient, if we don't wish to be alienated as 'weak' or 'needy'.

The fallacy here resides in assuming that being individually different requires us to relinquish our need for support from our neighbourhood.

The reality is that being individually different makes us *more* dependent on our neighbours and neighbourhood, not less so. Along with individual differences come individual strengths and weaknesses that *complement* rather than oppose those of others in our neighbourhood. Moreover, in

a natural world that is intrinsically variable and dynamic, we cannot avoid being individually different, because *our outlook from any particular locality is invariably unique*.

For example:-

A football team in which all players are equally skilful in all respects, have the same view of what is happening, and play as if none of the others have anything to do with them isn't likely to score or prevent many goals!

So what good sense is there in aspiring to create such social formations?

Mistaking objectivity for impartiality

'Let's look at this objectively', is the almost universal call of the abstract thinker who believes that human problems can only be solved by standing emotionally apart from them, as an independent judge, and deciding from that position of distance how things can be put right. This emotional stand-off was at the heart of the Enlightenment and Scientific Revolution, and continues to dominate academic and educational philosophy to this day, where detachment is thought of as the one and only way of avoiding 'subjective bias' in evaluating people's ideas, skills and knowledge. It is implicit in such notions as 'double blind-testing' and 'anonymous exam scripts' in which an evaluator is deliberately denied knowledge of what and/or who is being evaluated. Unfortunately this deliberate distancing of the 'observer' from the 'observed', and its associated denial of 'inside knowledge' to either can actually lead the observer to 'turn a blind eye' to important information and so form conclusions that are very one-sided and hence not at all impartial in the sense of comprehensively taking all relevant facts into account.

The fallacy of regarding objectivity as unbiased resides in the fact that a detached view automatically excludes relevant information in the same way that not having eyes on the back of our heads can render us unaware of what's behind and to the side of us

In other words, objective vision renders us unaware of context and our own presence and influence within what we are observing.

For example:-

A 'birds-eye view' of a football game may enable us to locate the positions and trajectories of the players, and to see possibilities that the players can't, with great accuracy. But it provides us with no awareness of what each of the uniquely situated individual players is seeing, hearing, smelling, tasting and touching, and what they are responding to, including the observers watching them. This is why the comments of 'spectator-critics' are often so 'out of touch' with what is actually going on, notwithstanding their privileged position. True understanding of situation requires much more than the one-sided view given to us by our binocular vision. True understanding requires an all-round or 'circumspect' awareness of spatial and energetic context, and to gain this requires imaginative insight and sharing of individual viewpoints with others – as in the 'sharing circles' of indigenous cultures.

Mistaking financial wealth for quality of life

'Money can't buy me love', the Beatles once sang – rather ironically in view of the fact that singing about love brought them loads of money. Since that time, in the 1960s, when 'Love' was top of the agenda for discussion, and materialism was seriously being questioned, albeit with the aid of 'Lucy in the Sky with Diamonds', modern cultures have reverted to an obsession with money and power as primary motivating forces. Under the influence of 'Game Theory', neo-Darwinian 'sociobiology' (incorporating 'selfish gene theory') and monetarism, the socio-economics of restrictive self-interest and purely financial wealth prescribed by Adam Smith have returned to prominence, and love has disappeared from the map of serious and even polite discussion. Disparities between rich and poor have grown even wider, and the need to sustain economic growth continues to take precedence over environmental sustainability, for all the talk about the need to protect and enhance our quality of life. Meanwhile public knowledge and appreciation of biological diversity within their own neighbourhoods continues to dwindle as our educational institutions become dominated

by commercial interests instead of seeking to enhance public awareness of the natural world as it actually is.

The fallacy in prioritizing financial wealth resides in the fact that money as an abstract commodity based on the principle of personal ownership of property is NOT natural currency: energy is natural currency.

There is clear anthropological evidence that prior to barter and financial transaction, human social organization was and in some indigenous communities still is primarily orchestrated according to principles of 'gift flow'. These correspond closely with the circulatory and redistributive supply, receipt and temporary retention of natural energy flow. Life is appreciated as a gift of natural energy flow, to be received, cared for and passed on in the goodness of place-time. Even in modern cultures, intangible qualities of love and artistic creativity are a shared source of profound human pleasure and caring that defy, and are defiled by, any attempt to commoditize or quantify them.

At the heart of traditional gift flow is *trust* in the principle that what is freely given is equally freely returned in the long-run, such that whoever gives away most also receives most, and *vice versa*. This harmonizing principle is broken as soon as anyone accepts without giving or *vice versa*. Such restrictive practices give rise to a breakdown of trust that gives rise to further restrictive practices, setting the scene for a vicious cycle of competition, conflict and increasingly rigorous legislation to define trading practice and monetary transactions. By the same token, such restrictive economic rationality is associated with the localization (privatization/ nationalization) of self and/or group identity and individual or public 'rights' of property *ownership*. Sometimes systems of gift flow may operate within family/social groupings alongside rigidly structured trading or economic practice between groups. This implies a hard boundary limit between the two and a resulting 'double standard' sometimes referred to as 'the double law of Moses', which permits repayment of a loan to be demanded from 'another', but not from a 'brother'. In other words, there is one rule for 'insiders' or 'familiar' and another for 'outsiders' or 'strangers'. The question then arises as to where and when to define the limit between one and the other. Where and when does the natural inclusion of each in the other's gift end, and the abstract estrangement and exploitation of the other's needs and talents begin?

Having recognised the origins of financial systems in abstract notions of personal property and fear and exploitation of strangers, it is easy to see how these systems become a source of human conflict and disparities in social status that have little to do with individual and collective contributions to natural energy flow and quality of life.

For example:-

Any current viewing of lists of the world's wealthiest and most highly paid people reveals that those most rewarded are not generally those who contribute most to the wellbeing of their natural neighbourhood. Instead we find a tiny minority of people whose wealth far exceeds that of the vast majority of people put together. While most people struggle to fulfil their most basic human needs, these relatively few fritter their wealth on superfluous extravagances, and encourage others to do the same in order to keep the 'wheels of industry and commerce' turning. In many cases financial wealth is traceable to socially and environmentally exploitative endeavours, including slavery. Currently we have lottery systems in which non-wealthy people are tempted to gamble a proportion of their limited income on the remote chance of becoming multi-millionaires overnight, and the proceeds are used to fund charitable projects intended to promote the well-being and natural heritage compromised by money-making. That these systems are regarded as morally acceptable is ironic, to put it mildly, a symptom of the double standards we have come to live by. Meanwhile, with so much attention being diverted to money-making, few people are able to spare 'time' to enjoy the deeper pleasures that life and love have to offer. Even fewer are prepared to reflect on the fundamental mistake of abstract perception that leads us to prioritize money-making at the expense of our natural neighbourhood, and show how this mistake can be amended.

Mistaking arrogance for strong leadership

Strong leadership is widely regarded as essential to the success of human organizations. By the same token, weak leadership is commonly held responsible for organizational failure and breakdown. When things start to go wrong, the call therefore almost invariably goes up for a strong leader, in the form of some kind of messianic agency, to put things right.

The kinds of qualities expected of a strong leader are, however, liable to depend greatly upon whether the underlying perception of successful organization is abstract or natural. Abstract perceptions are based on the imposition of order and predictability onto what would otherwise be expected to be shambolic free-for-alls. Authoritarianism – Iron Rule imposed by Iron Men and Iron Ladies is therefore called for, and all-too-often given, with what can prove to be catastrophic and long-lasting consequences that bring immense human suffering in its wake. The rise to power of all sorts of despotic figures, throughout recorded human history is testimony to this tendency.

The fallacy of authoritarian leadership resides in its quest to subjugate instead of facilitating and channelling natural energy flow.

As King Canute is reputed to have demonstrated, authoritarian leadership seeks from a single vantage point, to ‘rule the waves’, not to attune with their flow. This is brittle vanity, not resilient sanity. And as Jesus of Nazareth sought to demonstrate, at great personal cost, true Messianic qualities arise not from the imposing ‘cast iron certainty’ that issues ‘Thou shalt not’ Commandments, but through the forgiving ‘bamboo flexibility’ that encourages loving acceptance of natural human vulnerability and neighbourhood. And as the legendary figure of King Arthur humbly recognised, the circumspection of an all-round view is as vital to sustaining life in a changeable world as is the directional focus from a singular viewpoint.

So, what abstract perception views as weak and indecisive, a path to individual and collective annihilation, natural perception reveals to be courageous, realistic, democratic and loving leadership, fluidly open to the possibilities of sustaining life in the long run. And what abstract perception celebrates as strong and decisive, natural perception reveals to be cowardly, unrealistic, divisive and derisive, rigidly closed off from the possibilities of life in an evolutionary context. Abstract leadership is suppressive and adversarial, implacably opposed to whatever is outside its definitive frame of reference, whereas natural leadership is progressive and inspirational, accepting of truth in all its guises. Abstract leadership leads into conflict with what it opposes and urges people to take sides; natural leadership leads into appreciation of the middle way, which recognises the complementarity of distinctive but not mutually exclusive views of nature and human nature.

For example:-

The history of human discovery is full of ‘tales of the unexpected’, where the rigid and suppressive beliefs of an authoritarian leadership were eventually, and sometimes after the great struggle and hardship of pioneering ‘doubters’, shown to be untrue, allowing a ‘new paradigm’ to emerge. So much knowledge that we nowadays take for granted, from the Earth’s orbit around the sun to our own capacity to travel beyond Earth’s atmosphere has been discounted vehemently by the definitive thinking of previous authority. Moreover, for all our technological advancements and biological knowledge, the way we continue to treat ourselves and our natural neighbourhood as if we were definable objects, subject to authoritarian rule, flies in the face of our natural condition as living inhabitants of a variably fluid world in a variably fluid planet. Definitive authority is arrogance, not natural strength. To doubt the truth of definitive authority brings sustainable strength – whenever it gets the chance to do so.

Mistaking popularity for preferability

In social situations where abstract thinking requires a decisive choice to be made between two or more alternative views, people or courses of action, it is common for that which is most popular to prevail. Indeed this is the basis of what are misleadingly called ‘democratic’ elections, but in reality result in the suppression of minority views by ‘majority rule’ – a far cry from ‘governance for all, by all, through all’, in which ‘all kinds contribute in complementary ways to the common good’. This is unfortunate, because there is no guarantee that the most popular view, person or course of

action *alone* will be 'correct' in all respects. Indeed, there is good reason to recognise that whichever of two or more alternatives is most popular is certain to be deficient in some way. *The fallacy of regarding whichever of two or more alternatives is most popular as preferable resides most fundamentally in the fact that alternative views of the same situation are, by their very nature, partial views, not comprehensive views that take into account all aspects of the situation.* For truth-seekers, comprehensive views are obviously preferable to partial views, but are not possible to obtain from a single vantage point. Everyone located around an elephant has a different view of the elephant: no particular view is any better or worse than any other, but each can contribute in a complementary way to a comprehensive awareness of the elephant in all its aspects. The 'sharing circles' of indigenous cultures are a truly democratic form of governance based on bringing diverse views together so as to gain comprehensive awareness of a situation. Most modern forms of governance and peer-review are, by contrast, based on disputation between partial views, not their synthesis into a broader vision that encompasses all of them. This has especially serious consequences when valid and vital views are suppressed by using emotive and abstract arguments, not realistic reasoning, to make them unpopular and so discourage from expressing them.

For example:-

All kinds of partisan politics go out of their way to polarise public opinion between alternative positions, which exclude any middle ground view that can recognise the validity and limitations of both. Each position demands 'unity' amongst its supporters, such that any expression of dissent within its ranks is seen as divisive and liable to undermine its credibility and popularity. Most commonly, the polarization is between individualistic and collectivistic interpretations of nature and human nature that are characterized respectively as 'right wing' or 'left wing'. A right-wing politician may then declare that 'there is no such thing as society!' A left-wing politician may declare that 'there is no such thing as individual aspiration'. Voters may then be required to choose which of these alternatives should prevail, not asked how the conflict between the two could be reconciled. Situations then can and do arise in which large proportions of a population is subjected by a government from which it feels alienated – hardly a recipe for good neighbourhood! Patrick Leigh Fermor, in his book, 'Between The Woods and the Water' (p. 95, 1986; John Murray, G.B.) described the antipathy between Rumanians and Hungarians in pre-war Transylvania as follows:

"The opposing cases were skillfully and persuasively argued: in each the chains of logic seemed faultless; all objections were faced and demolished; and when I turned from one argument to its rival the same thing would happen, leaving me stranded between the two. I am the only person I know who has feelings of equal warmth for both these embattled claimants and I wish with fervour they could become friends....My unsatisfactory position between the two makes me useless to both" The sad irony in this is that he saw his 'position in between' as 'useless to both', when it was *actually what both desperately needed.*

Mistaking antagonistic argument for conflict-resolution

The paradoxical idea that disagreement can be resolved by antagonistic argument is deeply embedded in abstract philosophical, legal and political thought. Philosophical and scientific issues are debated by representatives of opposing schools of thought. The innocence or guilt of people accused of committing crimes is determined by the rhetoric of cases for prosecution and defence appealing to judge and juries. Parliaments are divided between government and opposition benches that propose and oppose motions. The chances of finding what each have in common and how each can complement the other co-creatively, given mutual understanding, are obliterated by the determination of one to defeat the other and declare 'victory'. But, with vast quantities of pride and prejudice at stake, it is rare for any party to admit to more than temporary defeat. And so the conflicts are not resolved, but perpetuated.

The fallacy in assuming that antagonistic argument can resolve disagreements resides in the fact that disagreements arise from definitive polarization in the first place.

Definitive polarization is a form of *disablement* – what Michael Polanyi described as a ‘crippling mutilation’ – which imposes a communication barrier between subject and object as isolated entities, albeit that in reality each is inescapably included in the other’s spatial and energetic neighbourhood.

For example:-

Anyone who commits themselves to be *entirely* ‘for’ one side and ‘against’ the other side of a dispute shows themselves to be intransigent – unable to take into account whatever contribution to mutual understanding the ‘other’ offers. Whether the dispute is between left and right, black and white, wife and husband, theist and atheist all possibility of *dialogue* is occluded by irresolvable *debate*.

Such is the deep cultural entrenchment of definitive language and polarized debate that readers of this essay may think I am arguing ‘entirely for’ natural inclusion and ‘entirely against’ abstract opposition – that I am opposed to opposition and am therefore guilty of ‘double standards’. This is not the case. I am arguing for a move, through awareness of natural inclusion, from the restrictive vision that isolates each from other to the more comprehensive and realistic vision that includes each in the other’s neighbourhood. This move recognises that abstract demarcations can provide useful ‘navigational aids’ as an *adjunct* to awareness of natural inclusion, like lines of longitude and latitude on a map, but become objects of polarized dispute when regarded as real dividing lines. The equator doesn’t cut planet Earth into antagonistic hemispheres – it is where the rotational influence of each comes into confluence with the other.

Mistaking central influence for central control

The notion that organizations are controlled from their centre has become a widespread and fundamental mistake of abstract thinking, which has been incorporated into human governance and management theory. It is a source of great resentment and stress, for administrators and administrated alike. Central administrators are overloaded with responsibility for far more than they can manage. Those administrated are aware of how remote from the realities of everyday life administrators generally are. A ‘them and us’ polarized mentality develops and self-perpetuates, which is detrimental to the quality of life of all concerned, but which neither ‘side’ can recognise how to resolve.

The fallacy of assuming central control resides in the fact that natural dynamic organization arises from the circulation of energetic activity around intangible centres of stillness, NOT from the forceful action of a tangible centre upon its surrounding objects.

Literally at the heart of this fallacy, then, is the primary mistake of mentally excluding or confining the intangible presence of receptive space from or within tangible and/or definitive structure.

For example:-

One only has to observe a spinning wheel to recognise that it cannot be driven from the motionless, ultimately intangible, central axis that has to be present if the wheel is to be able to spin in the first place. Natural organizational centres cannot *drive* anything – they are *receptive* centres of *inactivity* that *induce* the flow of energetic activity around them, as in the ‘eye of the storm’. As recognized long ago by Lao Tzu:-

*Thirty spokes are made one by holes in a hub
By vacancies joining them for a wheel’s use.*

*The use of clay in moulding pitchers
Comes from the hollow of its absence;*

*Doors, windows, in a house
Are used for their emptiness:
Thus we are helped by what is not*

To use what is.

From *The Way of Life: According to Lao Tzu* (Witter Bynner translation)

The currently fashionable field of network theory, in which abstract control ‘hubs’ and ‘nodes’ are joined up by connective lines is an example of the *trap* that notions of centralized control fall into when receptive influence is ignored. The resulting definitive spider’s web-like structure is a far cry from natural flow-networks like blood systems, nerve systems and fungal mycelia:-

► Rather than being formed by stringing together a given set of initially independent entities, flow-networks *grow* into *place* through a combination of surface-maximizing and surface-minimizing processes that configure and reconfigure space in dynamic correspondence with energy availability. Fungal mycelia form when a spore germinates by first swelling symmetrically as it takes in water and nutrients across its bounding cell wall and membrane. The resulting structure then elongates, hence increasing surface area to volume ratio, through the emergence of a germ-tube or ‘hypha’ with a parabolic growing tip. Growth of this tube accelerates exponentially, as its absorptive surface increases, before attaining a more or less constant rate of extension, whence branches begin to emerge, each with their own parabolic growing tips. Eventually, in many fungi, as resources are depleted by the growing system, some of the branches begin to *fuse* or *anastomose* with one another, so converting the inner part of the system into a *network* of labyrinthine channels. During this process, the branches open up their external boundaries to one another, so that the space initially *between* them becomes the communicative space *within* them. The hubs and nodes in this system are the places from which the branches originally arose, rather than the loci of initially discrete entities. At no stage in the evolution of the system have these identities been *fully* dislocated from one another or the limitless pool of common space in which they are immersed and of which they are dynamic inclusions.

► By *growing* into place, these dynamic systems exhibit *indeterminacy*, the potential for indefinite expansion and transformation within boundaries that vary in their *deformability*, *permeability* and *connectivity* depending on contextual circumstances. Such indeterminacy brings scope for continual *improvisation*, *discovery* and *learning* through *co-creative evolutionary play* that is not fixed on a pre-determined course, but eases its own passage through a process of *autocatalytic flow* in which the flow of current lowers resistance to subsequent flow: sheep, wildebeest, ants and humans all exhibit this phenomenon as they create paths by following in one another’s wake. Some fungal mycelia making their way through ancient forest in this fashion are thought to cover up to square kilometres of ground and to be thousands of years old.

► By connecting their internal space *in parallel* rather than purely *in series*, flow-form networks greatly increase their conductivity and consequent capacity to store and supply power at or to localities on their boundaries (cf Figures 1, 3).

► Local, well connected centres in flow-form networks drain resources from the system, and inhibit its expansion. In fungi, fruit bodies and storage structures may form at such centres. In human organizations they have the potential to develop into exploitative growths and megalithic power structures.

► Degenerative processes in flow-form networks are vital as a means of preventing retention of power by core components of the system. For example, ‘fairy rings’, consisting of an annulus of spreading mycelium, result from the degeneration of the colony centre and release of its resources to supply the growing margin. In the absence of such degeneration, expansion of the system stalls.

► The ability of flow-form networks to differentiate, integrate and degenerate, by varying the dynamic properties of their boundaries in tune with their circumstances and avoiding the wastage implicit in rationalistic ‘cost-cutting’, allows them to produce extraordinarily efficient organizations in highly heterogeneous situations. In fungi inhabiting the forest floor, for example, this ability allows them to make connections between local sources of nutrients in decaying wood, leaf litter and roots, to form an underground communicative infrastructure, which brings the lives and deaths of the trees into a common circulation.

So, altogether, these living flow networks are far more sensitively attuned to the ever-reconfiguring space that their channels embody, than the inflexible meshwork entrapments current abstractions represent.

Mistaking emotion for lack of reason

Detachment of the observer from emotional involvement with the observed has been recognised as a requirement of objective reasoning since the Enlightenment and Scientific Revolution. This emotional detachment has been thought to be so essential to the making of impartial judgements that any expression of emotion has become inimical to abstract scientific methodology and discourse. Charles Darwin put it this way:-

*"A scientific man ought to have no wishes, no affections, - a mere **heart of stone**."*

Objective science and its underpinning definitive logic have hence gained a reputation for cold-heartedness, which is as off-putting to romantics as romanticism is to those who regard themselves as 'hard scientists'. The resulting alienation of emotionality from science and vice versa has been psychologically, socially and environmentally damaging – a crippling negation of what truly 'natural' science has to offer for understanding of our place in the world as it actually is, and is a source of dreadful cruelty in the treatment of ourselves and other living creatures as 'machines'. *The fallacy in alienating emotion from reason resides in the fact that there is good reason for the existence of emotion: emotion is no more and no less than an expression of the natural energy flow ('e-motion') responsible for the emergence of living form.*

The alienation of emotion from our natural understanding of life is hence, quite literally, deadening. It numbs us from awareness of what it means to be alive, by closing the door on the possibility of appreciating ourselves as inextricable natural dynamic inclusions of our neighbourhood. It renders our view partial and prejudiced, not comprehensively impartial.

For example:-

Many of us have experience – as employees, students and patients – of how unpleasant it feels to be judged solely on our performance and treated without empathy as a machine, especially a defective machine, by managers, teachers and the medical profession. Just when we have most need of feeling cared for and reassured, we find ourselves placed in stark, uncomfortable surroundings and exposed to tests of our competence and health that if not 'passed' satisfactorily can seriously jeopardise our prospects. This lack of empathy that we encounter is a direct and sometimes deliberate product of objective detachment. Here is how John Keegan (*The Face of Battle*. London: Pimlico, 2004) describes military training:-

'...the deliberate injection of emotion...will seriously hinder, if not altogether defeat, the aim of officer-training. That aim...is to reduce the conduct of war to a set of rules and a system of procedures – and thereby make orderly and rational what is essentially chaotic and instinctive. It is an aim analogous to that pursued by medical schools in their fostering among students of a detached attitude to pain and distress... the rote-learning and repetitive form and the categorical, reductive quality ...has an important and intended psychological effect. Anti-militarists would call it depersonalizing and even dehumanizing. But given...that battles are going to happen, it is powerfully beneficial...one is helping him to avert the onset of fear, or, worse, of panic...'

Notice the assumption here: 'given that battles are going to happen'. This is what objectification of ourselves as machines ultimately does. It depicts life as a battleground – a 'struggle for existence' – in which anxiety is the last thing we want.

Anxiety, as the product of sensitivity to uncertainty and compassion for self and others, is, however, actually a powerful and realistic deterrent from conflict – a means of avoiding battles! Running away from the 'face of battle' is eminently sensible! It is true that there are situations in which anxiety can be disabling – you don't want a surgeon to have a panic attack in the middle of an operation! The real source of comfort in such situations is, however, not vainly to deny emotion, but to accept and soothe it through awareness of the source of most profound calmness deep within oneself.

Mistaking receptivity for weakness

Those of us who suffer from anxiety (and who, honestly, doesn't do so?) are all too familiar with the urge to 'pull ourselves together' and 'get a grip'. We're also only too familiar with how much

easier this is said than done, and how, in any case, it really doesn't help us to address our fears in more than a very temporary and unsatisfactory way.

Ironically, attempting to exclude emotional distress by seeking 'strength in hard-lining' – the proverbial 'stiff upper lip' of an 'armour-plated self' – is an all-too-emotional response to the insecurity that comes with admitting vulnerability. Far from truly being a robust show of strength and courage, what it actually betrays is a fearful inability to face the reality of what it means to be a living, loving, needful creature. And what it actually excludes is the *open-hearted receptivity* that comes with awareness of being *in the midst of life*, not set apart from life as a detached observer. It is this receptivity to inclusion in and of our natural neighbourhood that is the true source of emotional strength, courage and inner calm while fully acknowledging – not denying – our human vulnerability in the face of danger.

The fallacy of regarding receptivity to natural neighbourhood as weakness – a source of vulnerability to external influence – resides in the fact that such receptivity, which arises from the intangible presence of space within our energetic hearts, is the deepest form of Love, Agape Love, which human life cannot exist without.

An appreciation of natural inclusion can help us here to acknowledge the potent cocktail of desire and fear that leads us to seek the certainty of hard-lining ourselves against the receptive influence that we most need to recognize within ourselves. This appreciation enables us to review afresh some ancient ideas regarding the fundamental nature of life, love and their dynamic relationship. 'Eros' corresponds with 'radiant energy' (~light/electromagnetic radiation), 'Agape' with receptive space in the heart of bodily form and continuous with receptive space everywhere, and 'Philia' with 'bodily energy', which circulates around local centres of Agape (~gravity) to give rise to bodily flow-form. None of these can express their reciprocal co-creative potential in the absence of the other. The bringing of each into the other's influence can, on the other hand, lead to the most extraordinary expression of human potential.

For example:-

You don't have to be a religious 'believer' to be able to recognise Agape as the loving receptivity to neighbourhood shown by Jesus of Nazareth, stripped bare of all pretension to high and mightiness, during his ordeal on the cross. Here were the passion and compassion of the human spirit and soul in frailty of body most poignantly displayed. How many could honestly describe that display as the display of 'weakness' and 'sentiment' that abstract thought attributes to expressions of vulnerability and love? Clearly, it was nothing of the sort. On the other hand, the display of iron will that nailed Jesus demonstrates only too clearly the cruelty that abstract authoritarianism is capable of when its credibility is threatened by what it despises as weakness. This is what underlies all kinds of bullying and victimization, over scales ranging from schoolroom to Nation State.

Regarding error as a mistake

The fear of receptivity as a source of weakness is closely related to intolerance of our human capacity for error, which some cultures go so far as to regard as 'original sin', a catastrophic departure from the path of righteousness, which renders people mortal and damnable. Efforts to remove or minimise error by 'straightening out irregularity' are hence evident to this day, throughout human theological, educational, management and engineering practice as well as in conventional mathematics and scientific methodology and conceptualization. The ideological intolerance underlying these efforts is perhaps most paradoxically expressed in the Darwinian oxymoron of 'natural selection' as a process of elimination of the very variability upon which evolution itself depends. This intolerance is in turn a source of deep human distress, conflict and loss of creativity. It is a fundamental and damaging mistake of abstract thinking.

The fallacy of regarding error as detrimental to human life resides in the fact that the capacity to deviate from a pre-defined path is implicit in natural fluidity as an expression of the mutual inclusion of space and energy in the evolutionary processes that make human life and inventiveness possible.

Here it is important to recognise that the original meaning of ‘to err’ is ‘to wander’, not necessarily to ‘make a mistake’. Error hence has an experimental or playful quality. We only have to observe the irregular patterns formed by meandering rivers, undulating hillsides, rocky seashores, billowing clouds, flickering flames, branching trees and all kinds of animal trails to recognise that erratic wandering is a fundamental quality of the natural flow-geometry of which we human beings are ourselves an expression. Exact reproducibility, regularity and straight-lining are features of immobilized and repetitive structure, as in frozen and crystalline form, not natural wildness, warmth and creativity.

As William Blake recognised:-

“The tree which moves some to tears of joy is in the eyes of others only a green thing which stands in the way. Some see nature as all ridicule and deformity...and some scarce see nature at all. But by the eyes of a man of imagination, nature is imagination itself”

He might have added: *error is the imagination of Nature*

So it is only the prejudice that Nature and human nature somehow *ought* to conform to some pre-imposed *order* or set of rules, which leads error to be perceived as ‘wrong-doing’ – making a mistake, which needs to be corrected. But it is this same supposition that actually makes the truly huge mistake of requiring us to behave in a rigidly restricted way that contradicts how we naturally are in the world as it naturally is, and by so doing prevents us from fulfilling our potential as living, loving, explorative, imaginative and creative creatures.

For example:-

Those of us who have experienced a rule-bound education know what a disconcerting, unadventurous experience this is. Instead of being guided out into a wider awareness of ourselves and the world we inhabit, we experience a narrowing of our mental horizons as we are prepared for a life of doing what we are expected to do in accordance with established theory and practice. That is, we experience ourselves being *trained* to follow the prescriptive rules of a ‘standard curriculum’ into becoming another ‘brick in the wall’ of definitive abstraction, not truly *educated* into realizing our human creative potential. We are equipped only to repeat the learning experience – and mistakes – of our predecessors, not to explore the unfamiliar territory in which new discovery becomes possible.

This isn’t to say that there is no place for discipline and repetition in our educational praxis. Certain facts of existence and human history don’t change, and certain procedures are best done in a specific way. In such cases it is a mistake to depart from what our predecessors have learned and passed on to successive generations. But in a changeable and uncertain world and evolving culture, our minds need also to be prepared to be open to the possibility of discovering new knowledge and understanding, and here error as a means of departing from previously established pathways becomes vital. Indeed, if we care to admit it, the story of radical scientific and technological discovery is not one of consciously planned, incremental advance along a predictable trajectory, but rather a story of *unintentional* error as the imagination of human nature! An often quoted example is Alexander Fleming’s discovery of penicillin through his imaginative understanding of what was happening in a contaminated Petri dish that most microbiologists at that time would have discarded as an ‘impure culture’, not part of their research plans. Fleming didn’t just observe what was happening with his eyesight, he saw in his ‘mind’s eye’ the new path of enquiry and discovery that it opened up.

Mistaking unity for community

The call for ‘unity’ to remedy the division of a human community into antagonistic factions is one of the many paradoxes arising from the abstract intolerance of natural variation as a product of error. It is closely related to the mistake of equating difference with opposition. Instead of appreciating the vitality of natural variety to the co-creativity of community life, all are ordered to combine together as ‘One’, with a common purpose that overrides individual differences and aspirations. Moreover, this call most often goes out as a response to what is perceived to be a

common enemy, for example in wartime. So small scale hostility is replaced by grand scale hostility of one towards other.

The fallacy of seeking 'unity' as a basis for social coherence arises from the fact that the imposition of conformity upon individual variation produces a sterilized monoculture, not a fertile community. This fallacy can quickly be recognised through appreciating the functional dependence of natural collective organizations upon the diverse contributions of their membership.

For example:-

Unlike a plantation, natural forests are not fenced-in monotonous stands of the same kind of tree. They are rich assemblages of all kinds of trees, herbs, fungi, bacteria and animals of different size and age, each of which influences the lives of the others in diverse ways to produce a dynamic collective that lives openly attuned within and as a co-creator of its environmental context. Human communities originally evolved and functioned in much the same way. All that prevents them from continuing to do so is the abstract division of different kinds into definitive categories, whereupon the scene is set for trenchant opposition between them in place of co-creative interplay. This opposition cannot be remedied using the same kind of 'one or many' thinking that gave rise to it. It can only be remedied by resisting the compulsion to divide or unify:

United we stall, divided we fall; dynamically diverse we thrive in the energy flow of each in all

Mistaking incompleteness for inadequacy

A widespread product of the definitive discrimination between 'wholes', as singular entities, and 'parts' as component entities is the idea that inadequacy within ourselves or others arises from incompleteness – missing one or more parts that are needed to make us or them 'whole'. We may hence seek to remedy this inadequacy by adding what's missing to make us or them 'complete', by way of a suitable partner, philosophy or piece of information. Trying to find what's missing may then become a lifelong and ultimately insatiable obsession, because what's actually missing is an appreciation of the fact that in the real world of natural energy flow, there's no such thing as completeness.

The fallacy of seeking completeness as a remedy for inadequacy resides in the fact that the idea of completeness itself arises from an inadequate comprehension of natural continuity.

Completeness, as an abstract concept, implies the absolute isolation of the inside of something from its surroundings by a definitive boundary. To seek completeness in one way and another is therefore to seek to end life, not to sustain life. The desire for completeness is a desire for *closure*, which ultimately can only bring sterility, not lasting contentment.

For example:-

The completion of a jigsaw or crossword puzzle brings only temporary satisfaction, before the search for another puzzle or the break-up or erasure of the existing one begins. The life of the puzzle comes from the void space within the interior of its *determinate* (i.e. definitive) design that we hunger to fill by exercising our imagination. No sooner is the last piece added or the last clue solved, then the fun stops dead. The real life of natural energy flow is like this too, except in one *vital* respect: real life is *indeterminate* – it *never* ceases to circulate and reconfigure around and within the receptive space that makes its movement possible in the first place. Real life *never* imposes closure on itself: the incompleteness of its *openness* to evolutionary change sustains it indefinitely.

Mistaking death for finality

Ironically, it is the belief in definitive beginnings and endings that is the source of fear that perpetuates the devastating mistakes made by abstract perception: the perception of death as an ultimate discontinuity, which finally cuts life off from its past or future. Faced with this apparent finality, life appears as a fixed term contract that begins and ends in either nothing or eternity, which humans have to make the best of in one way or another. But which way is best? There are three possible attitudes that people tend to display, each of which is detrimental to life as it's actually lived, in one way or another.

Some people tend to face life with eyes fixed predominantly in the present. Neither past nor future life is of any concern beyond the life span of the individual because this individual wasn't there and won't be there. This is a prescription for selfish behaviour in which as much pleasure or profit is abstracted from life as possible in the short term, oblivious both of heritage and sustainability. Other people tend to face life with eyes fixed predominantly on the future, from which the past is excised by the present. This future is determined absolutely by what immediately precedes it. History is a thing of the past and can be forgotten. By contrast the future - whether in this world or what is imagined to be the next - becomes an objective 'end' or 'goal' for which we can strive by any means that appears necessary in the short term of the present. Hence undesirable means may be thought to be justified by a desirable end, compelling us altruistically to sacrifice past and present to future, so as to ensure what is imagined to be the prosperity of our souls or offspring. Yet other people tend to face life with eyes fixed predominantly on the past, from which the future is excised by the present. This past is all we can know about and therefore care about, which we may wish to preserve at all costs as our best insurance against the dreaded uncertainty of the future. We cannot forget this past, least of all the many hurts that may have been suffered there, and so may traditionally sacrifice both present and future to it, locked into defensively preserving the dignity of our ancestry and heritage forever.

Whatever seems to threaten these attitudes to our past, present or future is perceived as an enemy. Ultimately, we may feel obliged to kill or be killed in a struggle for *survival* - persistent individual or collective *existence*. The resulting quests, as in the world wars of the twentieth century, to expunge enemy agency and so bring an end to past grievances and secure a desirable future are, however, no 'final solution' to our troubles, but serve only to perpetuate them through the abstract perception of death as a finality.

The fallacy of regarding death as finality is the fact that in natural ecosystems death is actually vital to the evolutionary sustenance of life as an expression of natural energy flow.

As can readily be surmised from observing natural processes of growth, death, degeneration and regeneration, far from ending life, death releases the energy present in one form of life to become available for assimilation into new forms of life. Death feeds, structures, protects and transforms life as a gift of natural energy flow to be received, sustained and passed on in natural relay, not a mad dash to be first past the finishing post.

For example:-

When we take a meal we participate in the great recycling process that is known as 'the global carbon cycle'. The initiation of this process comes largely through the reception of sunlight by green plants and the associated combination of carbon dioxide with the hydrogen from water to produce carbohydrates, whilst releasing oxygen. This photosynthetic receptivity of green plants makes them the sunlit world's primary producers of sources of organic carbon upon which the consumer world's animals, non-green plants, fungi and many kinds of bacteria depend.

The consumption of organic compounds as fuel involves the process known as 'respiration'. This can be thought of as a controlled explosion, analogous to that in an internal combustion engine, which releases chemical energy in a form (known as adenosine triphosphate or ATP) that supports the vibrant activity of living systems. In its fullest expression, respiration involves that other product of photosynthesis, oxygen, to support the combustion of organic fuel into carbon dioxide and water - i.e. it is the *reverse* of photosynthesis.

Within the carbon cycle, hugely complex arrays of feeding relationships become possible in which death enables redistribution from one form of life to another. These arrays are commonly referred to using such terms as 'food webs' and 'food chains', but in reality they are branching channels that combine into flow-networks. Here, herbivorous animals consume plants. Carnivorous animals consume the meat from other animals, both as carrion feeders and as predators. Larger carnivores consume smaller carnivores. Carnivorous plants, like venus fly traps, supplement their

photosynthetic diet by consuming small animals like flies as a source of nitrogen. Carnivorous fungi consume small animals like nematode worms. A host of small animals consume the detritus from larger animals and plants. Fungi and bacteria play enormously important roles in decomposition of the remains of other organisms.

There are also many ways in which death enables redistribution from redundant to active phases of development within the same life form. A good illustration of the re-distributive role of death in the life of plants can be gained from studying trees. Imagine for a moment what a mature tree would look like if it had retained all the branches and leaves that it produced over its long life span: an impenetrable thicket! In the process of maturation, trees undergo annual cycles of expansion and shedding of their canopy, which we can trace in the scars of detached leaves, bud scales, acorns and twigs along its branches. These self-pruned detachments will have fallen as a rain of litter to the underlying ground, and been incorporated into soil through the process of decomposition, whence the mineral nutrients they contain can be transferred back into the tree through its roots and fungal partnerships called mycorrhizas. Meanwhile any soluble sources of carbon they contain will have been transferred back into the tree via an abscission zone before fall.

The central core of what is known as 'heartwood' in trees is produced through the death of cells in wood that has ceased to conduct water. Once removed from the tree, this heartwood provides a very durable timber, useful in the construction of ships and buildings, but within the tree it is susceptible to decay by fungi. Correspondingly the core of many mature trees is actually a hollow heart, a cavity that provides a habitat for many other forms of life, and into which the tree may itself root.

Amongst fungi, one of the most familiar examples of the vital inclusion of death in life occurs in the hollow centre of fairy rings. As the centre of these systems dies, it feeds the expansion of their perimeter.

What is known as 'metamorphosis' in animals involves the conversion from a larva to an adult, e.g. the transformation of a tadpole into a frog or a caterpillar into a butterfly. In the case of a tadpole, the tail and gills which are appropriate for a life in water degenerate and become replaced by the legs and lungs that enable frogs to make their way on land. The degeneration and re-absorption of the tail is a re-distributive process that involves what is known as 'apoptosis', developmentally 'programmed' cell death.

Degenerative processes are even more apparent during insect metamorphosis, where virtually the entire muscle system of a larva is absent from adults. This transition also involves conversion from soft-bodied forms with relatively deformable external boundaries to hard-bodied forms with a rigidified, armour-like 'exoskeleton'. The soft-bodied forms are able to enlarge partly because of the expandability of their skin or 'cuticle' and partly because once the cuticle can be stretched no further, it is separated off and discarded. Often there are several such moults ('ecdyses') between separate larval stages ('instars'), analogous to the annual shedding of leaves and twigs from a tree. When the final instar reaches its size limit, the cuticle is hardened to produce a pupa, which does not expand further and seals in the resources accumulated by the feeding larva. Emergence from the pupa then entails the degeneration of larval tissues, abandonment of the pupa casing and activation of embryonic cells that have lain dormant during proliferation of larval tissues from the egg.

Trees provide an excellent example of how death structures life, consisting, as they very largely do, of a bark-covered set of woody channels that connect its photosynthetic canopy with its water and mineral gathering roots and mycorrhizas below ground. Both wood and bark are the products of cell

death, associated with the formation of relatively impermeable compounds known respectively as lignin and suberin. Correspondingly, the living tissues of a tree are distributed very thinly indeed within and over the skeletal lining that they continually add to. In somewhat similar ways, animals may fashion internal or external frameworks to live within and upon, both individually, as in shells and skeletons, and collectively as in coral reefs.

Quite recently, it has been recognized that programmed cell death in multicellular organism limits the spread of cells that would otherwise develop into cancers. Indeed cancers can be thought of as potentially immortal forms of life that bring death to the corporate bodies that they inhabit, and so to themselves. Death can also protect an organism from infection by potentially disruptive intruders. Both the immunity systems of animals and what are known as the 'hypersensitive' systems of plants involve the 'suicide' of host cells as a way of sealing off their bodily interiors and releasing toxic chemicals that inhibit colonizers.

So, all in all, the real life study of natural biology tells us that death is not an ending, but an opening of possibilities for living, in which the present is not an instantaneous cut-off, but rather the bringing of past into the coming of future in a continuous process of evolutionary transformation. Lest we forget: the influence of past remains as life passes on endlessly into future; it cannot be expunged. When our own lives pass on, there will be other lives to receive our legacy. We need to care for now *and* then, not now *or* then, and that caring is what makes our endeavours worthwhile.

Mistaking pragmatism for realism

When seeking to bring about any kind of change in the way we live and think, there is an obvious pragmatic need to address the practical realities of the situation we find ourselves in. On the other hand, pragmatism can become a very serious source of inertia, which impedes much needed change by portraying this as 'unrealistic' and itself as 'realistic'. The problem becomes acute when the reality of our human situation is that we are living and thinking in a way that contradicts the reality of how we naturally are in the world as it naturally is. Pragmatism can then make it well-nigh impossible to change.

The fallacy of regarding pragmatism as realistic is that the reality of current practice can conflict with the reality of what is actually true.

Pragmatism can hence perpetuate the reality of living in accordance with a false perception of reality. Despite its intention to be concerned only with what is practical, not with theories or ideas, it is nonetheless 'theory-led', by abstract perception.

For example:-

When an oppressive governmental regime based on abstract individualistic or collectivistic perceptions assumes or is given power, supported by media propaganda, military force and policing, the pragmatic tendency is to 'stay with the Devil you know' rather than risk challenging it and embarking on an unfamiliar course whose outcome cannot be predicted. In this situation, change is only possible when public resistance grows to a threshold where the need for a change of course becomes irresistible. Change may then come about remarkably rapidly, as with the breakdown of the Soviet Union. Unfortunately, in the absence of deep understanding of how the situation has come about, this threshold is only reached when the human suffering it induces has become sufficiently intolerable. Moreover, the rate of change may then be too fast to allow adequate understanding of the underlying issues and the uncertainties these bring, whereupon reactionary appeals for a return to 'the old ways' become strengthened. Ultimately, the need is paramount to develop a truly realistic understanding of how the devastating mistakes of abstract perception come about, and how these can be circumvented through a deepened awareness of our natural situation.

Taking language literally

The development of spoken and written language, as a pragmatic way of communicating knowledge, ideas and understanding, is a double-edged sword that can both preserve and undermine abstract perceptions of reality. Which way it cuts depends fundamentally on how this sword is wielded.

When language is taken *literally* as an *abstraction* from actual experience, the intention is to gain control over our neighbourhood by *isolating* objects as 'nouns' from their habitat and describing their inter-actions as 'verbs'. We speak from a place *offset* from the midst of life, using linguistic and mathematical definition to impose definitive structure onto ourselves and our neighbourhood, and expecting others to do the same. We become so familiar with this practice that we start to conflate it with reality. Language becomes a trap for the unwary, not a liberator.

The fallacy of taking language literally is that actual experience is not definable into discontinuous packages of space, time, energy or matter.

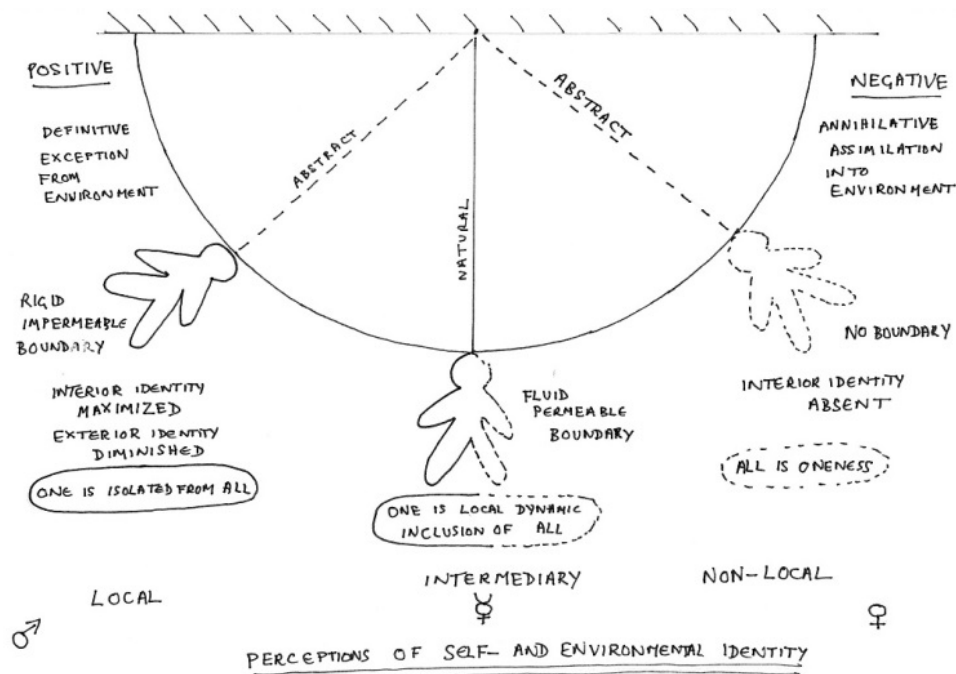
On the other hand, when we use language as an *adjunct* to actual experience, there is no conceptual intent to isolate what is experienced from its context. The underlying *need* is simply to learn from and recall experience in the process of distinguishing recurrent and non-recurrent forms and patterns, and to communicate this to others. We speak from a place *amidst* life as flow-form, using linguistic and mathematical description only as a way of signifying our current awareness of situation, a temporary guide-lining to help us and our companions on our way. Our language is therefore always poetic, allusive and metaphorical – it is never literally definitive.

Recognising this, we make generous allowance for our own and others' use of language in order to appreciate its underlying intent – while using language as carefully as possible to avoid the danger of being taken literally. We *really listen* to what is said, instead of leaping to definitive conclusions.

For example:-

I may describe language as a double-edged sword.

Epilogue: abstract and natural perceptions of self-identity in relation to environment



The above 'pendulum diagram' shows the difference between abstract and natural perceptions of 'self' in relation to 'environment', and how this relates in turn to different perceptions of space and boundaries. So much of our modern difficulty arises from excluding 'the middle way' that is able to resolve the incompatibility between alternative abstract views.

Instead of viewing this diagram askance, as an outsider, you may find it helpful to imagine yourself within each of the three figures. Does the following description hold true?

Within the definitively bounded figure, you feel entirely alone within yourself, aware of your set location as a centre of 'your' universe but utterly detached from it: you judge everything around you against a fixed reference frame set by yourself. This is the Cartesian view of the objectivistic framework, which still holds sway in abstract scientific methodology and theory, and treats boundaries as definitive dead zones ('hard lines'), not live interfacings. This is 'separate knowing'. Within the figure with dissolved/no boundary, you feel indistinguishable from all around you, yet have no sense of locality and so 'are lost in space': you are everywhere and nowhere at once. This is 'connective knowing', which treats boundaries as non-existent illusions and annihilates or diffuses self-identity to all around: to some it feels like bliss, a realm of utter calm, utter passivity/lack of agency, which simply accepts whatever comes, unconditionally. Within the figure with dynamic boundaries, you have a sense of being included in all around you, without entirely losing your locality or agency, aware both of the omnipresent calmness of space and the local excitability of energy within your living boundaries as dynamic distinctions between your spatially continuous inner and outer worlds. This is what it truly means to be alive, involved and fully aware of your self-identity as a dynamic natural inclusion of my neighbourhood.

You might also find it helpful to view the image as a 'negative', such that the omnipresence of darkness and locality of light as a dynamic inclusion of and in darkness is brought out.

Abstract thinking removes the middle possibility of self-identity as a dynamic inclusion of neighbourhood. This leads to two incompatible kinds of abstract logic, which have been at odds with one another for millennia. Propositional 'two-value logic' (also known as the Law of the Excluded Middle) straightforwardly regards one or other of the two mutually exclusive alternatives (definitively bounded or unbounded) to be 'true' and the other as 'false'.

Commonly, however, since definitive isolation precludes passionate and compassionate feeling, a need arises to accept that both abstract alternatives are equally true, even though they are mutually exclusive. Since there is no way to resolve this incompatibility naturally, by allowing boundaries to fluidize and space to be continuous, the brutality of one and the softness of the other are held in the mutual antipathy of an inescapable dialectic logic.

It is as though, in the attached diagram, the hard-bounded and the unbounded are pummelled like a boxer's punch-ball between alternative forms of abstraction, instead of being allowed to balance dynamically.

What then can happen is for fear of the alternative to drive violent opposition between irresolvable desires for absolute internal security and absolute external freedom, neither of which is possible in the reality of natural evolutionary process. The opposition of each to the other drives the opposition of both to what brings each into the other's embrace in an anti-natural dynamic that brings great distress, conflict and inconsistency. The rigidly encapsulated ego sees the need for softness but can't

relax its self-definition for fear of losing its identity and mastery over other. The dissolved ego feels the need for agency but fears the potential brutality of self-encapsulation.

And so the living contradiction of each against other continues, without the natural resolution that is ever possible through the mutual inclusion of receptive presence and informative presence in each other's natural embrace. Abstract logic denies the natural resolution as the result of what might be called 'Anti-Naturalism' or 'Abstract Fundamentalism'. That is, all forms of 'fundamentalism' arise from 'abstraction' as one form or another of 'anti-naturalism'. Literally by definition, they are impervious to and denigrating of natural wisdom. They therefore come fully equipped with an imperialistic attitude of mind, which seeks to overrule one aspect or another of what they denigrate, and does so remorselessly.

This Anti-Naturalism is the symbolism of the Fall – the fear of Nature and its false dichotomy into Light and Dark as manifestations of Good and Evil instead of the mutual inclusion of each in the other. The result of that false dichotomy between abstract alternatives remains with us to this day as an ongoing tragedy, the antithesis of natural wisdom.

Acknowledgement

I would like to acknowledge the support of several friends, most notably Rev. Roy Reynolds, during the preparation of this article.

Never Quite Knowing - Self as a Natural Centre of Circulation

By Alan Rayner

Never Quite Knowing

Life is a creative exploration of renewing possibility,
Not a competitive struggle for permanent existence –
Poetry, not Prose
Improvisation, not Prescription,
Tolerance, not Rigidity,
A Search for Openings, not Quest for Completion

Motion in Stillness, Stillness in Motion,
Responsiveness in Receptivity, Receptivity in Responsiveness,
Energy in Space, Space in Energy,
Not One or Other Alone,
No matter without no matter

Never Quite Knowing
What's coming next,
Preparing for Surprise,
Ready to change One's mind,
One's direction

That's the evolutionary learning curve
In natural inclusion –
Truly natural Science,
Truly natural Art
Exploring natural neighbourhood with Love
Exciting and Inspiring
Isn't It?

22nd October 2015, with appreciation of Emily Dickinson, 'I Dwell in Possibility'

How do you perceive the life of your Self in relation to Nature? Have you ever walked down the same path twice? Is every day, every encounter you make along your way through life exactly the same to you? If not, do you notice what differs, what changes, what to expect, what not to expect and what it all means to you?

When I was very young, I was wordlessly aware of my Self and other's Selves as natural centres of circulation, like eddies in a flowing current journeying to who knows quite where. I have retained that awareness throughout my life. The only difference today is that I can try to describe it in words – and each attempt I make is different, in its own way, sometimes subtly, sometimes hugely.

Back then, as the *recipient* of others' and mother's care, I simply *felt* my Self to be an energetic bodily bundling of energy around a hollow interior within endless space, craving a supply of food, water, warmth, softness and firmness from all surrounding me to keep me content. I knew the discomfort of being deprived of this supply, and like all human infants had an ear-piercing way of bringing this to others' notice.

Then, one day, sitting with my mother amongst a circle of variably coloured, shaven or unshaven, turbaned or bare-headed visitors she had invited into our lounge for political discussion (my mother was a member of Nairobi City Council in the 1950s), I was startled by a powerful realization. Not only was I the embodied focal point of other characters circulating around me, but so too was each of those characters. We were each included in others' circulation within and around endless space.

We were each both providers and recipients of regard for and from others. We were all inhabitants of each other's spatial and temporal neighbourhood, whose welfare depended utterly on how we regarded and hence treated one another.

When, in later life, I was told of Jesus's invitation to 'love your neighbour *as you love your Self*', it made immediate, obvious, natural sense to me. In my case, however, this invitation came to apply not only to my human neighbours, but to all inhabitants of my natural neighbourhood and thence to my natural neighbourhood – Nature – itself, as an endless presence everywhere. I became a devoted naturalist, dedicated to my life's work in *ecology*. Ultimately, ecology in its deepest, widest, most natural sense is the study of pattern, process and relationship at all scales of organization, from subatomic to galactic. But at least to begin with, I focused my attention primarily at the scale of earthly ecosystems and communities.

So, when, in my adult working life I sought to understand a living organism, population or community, my approach was always to try to gain a feeling for it by actually and imaginatively immersing my Self, as a centre of circulation, within its circulation. I would study it *empathically*, as a *receptive and involved participant*, within the context of its natural neighbourhood, as an energetic inhabitant and expression of its habitat. Eventually this approach would yield a deeply felt, intuitive and aesthetic appreciation of my subject of study, which included while surpassing all which could be gathered from distanced analytical observation alone. As an illustration, my years spent studying the relationship between trees and fungi in forest and woodland ecosystems led me to prepare the following painting and description of 'Fountains of the Forest':



“A tree is a solar powered fountain, its sprays supplied through wood-lined conduits and sealed in by bark until their final outburst in leaves...Within and upon its branching, enfolding, water-containing surfaces, and reaching out from there into air and soil are branching, enfolding, water-containing surfaces of finer scale, the mycelial networks of fungi...which provide a communications interface for energy transfer from neighbour to neighbour, from living to dead, and from dead to living” – Alan Rayner, Presidential Address, British Mycological Society, December 1998

Today I took a walk with my wife, Marion, through woodlands close to our home in search of fungi for a public display. We're quite good at finding fungi, due to our long experience of knowing how to look (both from a distance and close to hand), where to look, where not to look, what to look for and why we find it where we do. But we're always prepared to be surprised.

We took the same walk last week, also in search of fungi, but for a different display. The first thing we noticed this time, as we trod the familiar path, was that large numbers of leaves had fallen onto it and all around it, obscuring what had been easily visible the week before. We were going to have to adjust our search pattern to take account of this new situation: we were going to have to turn over some old, newly fallen leaves! In fact we collected some of these leaves to show, because since last week they had yellowed, making the 'tarry spots' and 'green islands' where *Rhytisma acerinum* and *Uncinula bicornis* were growing all the more strikingly visible. What had previously been more visible was now obscured by what was now more visible!

We approached a middle-aged ash tree around whose base, last week, a crowd of Shaggy Scalycaps had fired up the shaded path-side. Oh good! Still here! If a little older, worse for wear. But still good enough to gather a few fading specimens into my basket. On we wandered, turning aside leaves, turning over logs and branches, and gradually my basket filled.

Then on to a different woodland, a different path, where last week we'd found crowds of Giant Fairy Clubs (for hitting giant fairies with, I like to joke). We searched and searched until at last, Marion said, 'here they are, but not as we expected to find them!' And, indeed, there they were, a crowd of stiff little fingers protruding from the leaf litter. But, unlike last time, when their pale buff colour showed up so clearly, they had turned dark brown – almost invisible, not good enough for show. Disappointed, we had one more 'star attraction' that we had hoped to find. 'We won't see it underneath all these leaves', Marion said. And, just at that moment, we did, striking us dumb with awe.



Sessile Earth Star (*Geastrum fimbriatum*), photographed by Marion Rayner

To return to the path of my working life, I gradually became aware that few, if any, of my scientific peers – or indeed anyone else – shared or understood my approach and the insights it gave rise to. What seemed so obvious to me was apparently not at all obvious to others – and indeed was disregarded and even resented by them. I became aware that, in some *crucial* way, the way in which I perceived my Self and others' Selves as centres of each other's circulation in and as

dynamic inclusions of Nature, was NOT how most other people perceived their Selves in relation to their natural neighbourhood. I became aware that the way I intuitively regard and treat my natural neighbourhood is not how I or others have been instructed to do so, as distanced observers isolated by some mental barrier from personal involvement in what we are observing. I was not, for example, following Charles Darwin's restrictive code of scientific praxis:-

*"A scientific man ought to have no wishes, no affections, - a mere **heart of stone**."*

Consequently, I did not envisage biological evolution to occur by 'natural selection – or the preservation of favoured races in the struggle for life', but instead understand it to arise through a process of 'natural inclusion' – the co-creative, fluid-dynamic transformation of all through all in receptive spatial context'. I recognise that Nature evolves as a continuous current, including and transforming what's possible, *not* as a definitive judge exterminating what isn't possible. This led me to develop a philosophy ('natural inclusionality') of natural inclusion based on awareness of all tangible natural occurrences as mutual inclusions of receptive space and informative energy'. Just like me as a baby – a needful energetic bundling of energy around a receptive, hollow interior, within endless space.

The starting place for understanding natural inclusion is *within* Nature, not as an abstracted observer of Nature. By 'Nature', here, I mean 'Everywhere'. We seek to understand and relate to everywhere (NB not just 'everything') and to recognize our human place as a dynamic locality within everywhere. We do not abstract ourselves or anything else from what we are dynamic inclusions of. This brings about a CRUCIAL change of perception from that associated with mentally abstracting ourselves and other localities from what naturally includes us. That change of perception incorporates our bodily feelings of being dynamically included in Nature as well as our more distant and objective observations (broadly sensed) of what is within and around us and others.

With that change of perception, we readily recognize the limitations of world views that are based on distant and objective observations alone. We realize the misconceptions and abuses that these can give rise to, such as abstract notions of hierarchical power and definitive boundaries that exclude any consideration of space and its vital role in life. We recognize instead the creative possibilities for living in a loving, naturally sustainable way, as did Emily Dickinson, who dwelled in possibility everywhere.

The Vitality of Each in the Otherness

Responses to Questions Regarding the Publication of 'NaturesScope'

<http://www.bestthinking.com/article/permalink/1761?tab=article&title=naturescope>

By Alan Rayner

1. Why did you write this book?

Quite simply, because I felt there is a need for it. I feel that for thousands of years we human beings have been teaching ourselves to think in a way that contradicts the way we naturally are in the world as it naturally is. I don't think this is wise. It estranges us from each other and our natural neighbourhood and so makes our life on Earth far more stressful, painful, conflict-torn, dishonest and ecologically unsustainable than it need be. At the same time it blinds us to the very real beauty and source of inspiration that is always within our reach, so long as we care enough to notice it.

As a naturalist and educator, I have made it my business to be *receptive* to what all kinds of animals, plants, fungi and microbes can tell me about why they are as they are where they are – the story of their 'evolutionary ecology' of 'being and becoming'. And the story I have heard *from* them, first-hand, is very different from the stories I have read and been taught *about* them in textbooks and by many of those regarded as authoritative experts.

This story, *from* Nature, tells me that life is a gift of natural energy flow, to be received, cared for and passed on in a continual co-creative evolutionary process of 'natural inclusion', not a battle of each against other in a continual struggle for existence. It tells me that we human beings, by and large, have made an awful mistake by attempting to cut our selves off from our natural origins and neighbourhood in order to remove or subjugate what we *judge* to be 'bad' or 'not in our self-interest'. It tells me that we have embedded this mistake in the very foundations of the logic and language that isolates 'subject' from 'object', *by imposing non-existent definitive limits* on each, instead of recognising that space naturally includes energy and energy naturally includes space in the 'each-in-the-otherness' of diverse flow-form. It tells me that in the process we have screwed up our science, mathematics, theology, psychology and systems of education and governance. It tells me that we have narcissistically projected our own estrangement onto our natural neighbourhood. It tells me that if we carry on this way, we can only come to grief.

So, I wrote the book to tell *Nature's* story, *both* of what we have been doing wrong to, by omitting to consider what we take for granted or judge to be 'beyond the pale', *and* how, if we use our *imagination* more realistically, we might yet find ourselves more happily placed *within* and as natural configurations of what we have mentally cut our selves off from. This placement of all form as flow-form, including ourselves, within and as an energetic configuration of what we are prone mentally to stand in judgment over and choose to exclude or ignore, is what I call 'natural inclusionality'.

2. Could you give an example, from Nature, which illustrates this 'organizing principle' of 'each in the otherness', or 'natural inclusionality', in which space includes energy and energy includes space in diverse flow-form?

Any natural form is an example of this principle, but I find trees especially evocative. See <http://www.youtube.com/watch?v=fY04y8P0zwE>

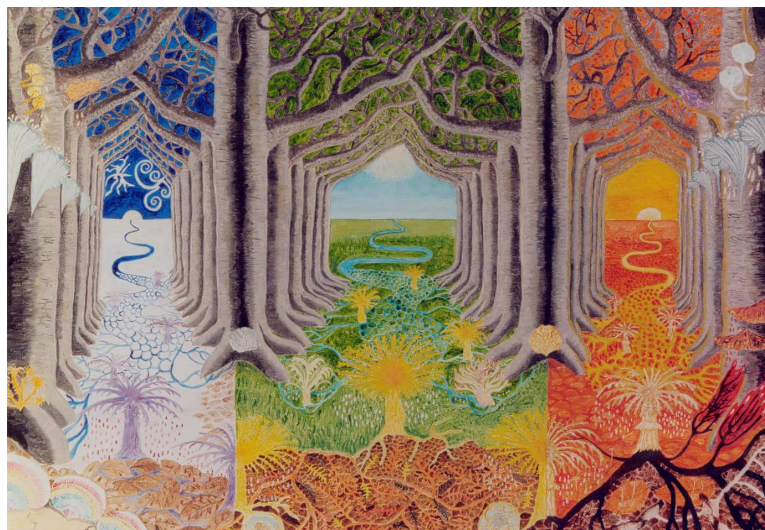
Here is a comment by William Blake, which alludes to the difference between seeing a tree as an isolated object, a 'stick in the mud', so to speak, and as a 'flow-form', a natural dynamic inclusion of its neighbourhood:

"The tree which moves some to tears of joy is in the eyes of others only a green thing which stands in the way. Some see nature as all ridicule and deformity...and some scarce see nature at all. But by the eyes of a man of imagination, nature is imagination itself"

For myself, I like to describe the tree as a 'flow-form' in this way:

"A tree is a solar powered fountain, its sprays supplied through wood-lined conduits and sealed in by bark until their final outburst in leaves...Within and upon its branching, enfolding, water-containing surfaces, and reaching out from there into air and soil are branching, enfolding, water-containing surfaces of finer scale, the mycelial networks of fungi...which provide a communications interface for energy transfer from neighbour to neighbour, from living to dead, and from dead to living" – Alan Rayner, Presidential Address, British Mycological Society, December 1998

And I have illustrated this perception in my painting, 'Fountains of the Forest':



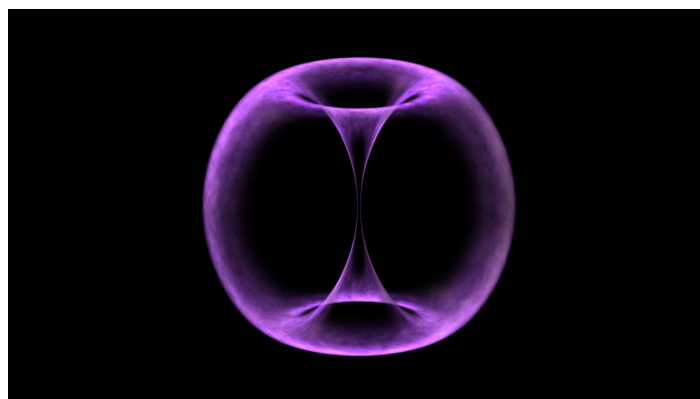
3. You imply that recognition of the organizing principle of 'each in the otherness' could make a huge difference not only to our way of viewing life but also to the way we live life. How come?

Imagine that everyone's self-identity does not stop at their skin-surface, but naturally and necessarily includes what is all around as well as within them - their natural neighbourhood. We are what we are obliged to breathe in as well as what we contain, so that if what we are immersed in is toxic, we inevitably suffer. Now imagine a political culture in which that natural inclusion of neighbourhood within self-identity, and self-identity within neighbourhood is not appreciated, so that everyone's self-identity is reduced down to purely what is within them as an individual subject or object. This directly gives one individual power over the other. Alternatively, imagine a political culture in which everyone's individual distinctiveness within their skins is suppressed so that they are forced to behave *en masse* as a single, group identity. This gives rise to autocratic, totalitarian governance. In one way or another, each of those cultures would occlude a vital aspect of what it actually and necessarily means to be alive. Each would be toxic, in a reciprocal way to the other.

Modern political cultures based on pure individualism or pure collectivism are toxic because they ignore a vital aspect of what it means to be alive, and so create the conditions for corruption and conflict. There is a need for a different kind of political culture, which accepts the way we naturally are as diverse inhabitants of our natural neighbourhood, and so makes way for an expanded awareness of self- and group-identity that takes in what is unnaturally excluded one way or another as 'other'. Such 'each in the otherness' is at the heart of the natural inclusional awareness that space includes energy and energy includes space in all natural forms of life, including human beings, as 'flow-forms'.

4. Is there any particular visualization of this organizing principle that could help to relate it to – and appreciate its point of departure from – familiar scientific and mathematical conceptions?

I very much like this image of a 'torus', taken from <http://www.thrivemovement.com/torus-3>



Imagine yourself situated at various locations within and beyond the purple form. How would you perceive this form and your situation? What would it feel like and what would it look like? Would you view the form as static or dynamic, as a complete entity or 'wholeness' in itself, or as an inclusion of some larger presence?

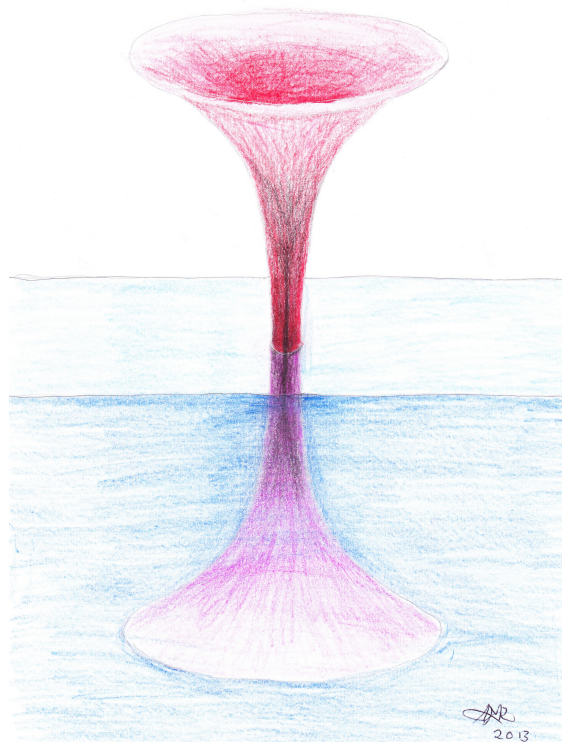
Let's now pause a while to contemplate the question of what makes the purple form – and indeed any natural form – distinguishable from its surroundings? It becomes apparent that the only way of answering this question is to acknowledge the occurrence of *at least* two kinds of natural presence: a *receptive context* or medium which provides *freedom for local movement and/or expression*, AND *local formative content*, which *informs* or *configures* that context. The former is necessarily *spacious*, the latter necessarily *cohesive*. Moreover, for form to be and become distinguishable, *each of these presences must naturally include the other*. Spacious presence alone would be formless void, and formative presence alone would have no shape or size. They are necessarily distinct, but mutually inclusive presences. They can neither be abstracted from one another as independent entities, nor be homogenised into 'Oneness'. The only way in which this necessity can be fulfilled is for one of these presences, natural space, ultimately to be *everywhere*, continuous, intangible (i.e. frictionless) and immobile, and for the other ultimately to be *somewhere*, distinctive, tangible and *continually* in motion. Natural space and figural boundaries are hence, respectively, *continuous* and *dynamically distinct* (i.e. dynamically continuous) *energetic interfacing*s between the insides and outsides of all natural forms as *flow-forms*

Suppose we now perceive the blackness/darkness in this image as a 'limitless pool' or continuum of natural space – as an immobile, frictionless presence of receptive 'slipperiness' – and the purple to represent energy or 'light' as a continually mobile presence. We might then begin to glimpse how each within the presence of the other can co-create natural flow-form through a kind of 'cosmic

tango'. The 'flow-geometry' underlying this dance of each in the other, in particular the formation of a torus via the association of three or more 'local-in-nonlocal spheres of influence', has actually been described at <http://www.bestthinking.com/article/permalink/1798?tab=article&title=place-time-the-flow-geometry-of-space>, where the 'superchannel' featured in my following painting can also be found:



In the core of the torus is a 'double vortex', or 'dynamic funnel', like that found in a tornado and as illustrated in my following drawing:



You could think of this drawing in terms of a red singular figure, set in opposition to its white background, diving through the surface of a blue sea of receptivity, and transforming therein to a purple (red in blue/blue in red) inclusion of each in the otherness (figure/energy in space and space in figure/energy).

You may notice that in the midst of this form is a *channel or cavity of space* that energy can circulate around, like clouds around the 'eye' of a hurricane, but in which it cannot linger. This relates to a point that I sometimes make about the paradoxical conflation of '1' and '0' and opposition of 'plus' (+) and minus (-) in the foundations of conventional mathematical logic. Such conflation and opposition arise from the unnatural imposition of definitive singularity onto form as a material abstraction from its spatial context. This imposition leads us to focus on both numerical and geometric figures in isolation from or as complete enclosures of space, instead of as dynamic inclusions of space. I think it would make more natural sense to symbolize the tangible (responsive/reflective) 'positive' presence of natural figures as '1', the frictionless (receptive) presence of space as '-' and the dynamic bodily balancing of 'each in the other', as '+', with '0' at the intersection of 'vertical' and 'horizontal'. See also the following painting of mine in which the 'elements' of 'earth', 'air', 'fire' and 'water' are brought together in the emergence of the passion flower and fruit as a natural flow-form around a black core of innermost space (zero) where upright figure and horizontal receptive surface intersect:



Let's now return to the image of the 'double vortex'. The colours in this image correspond with the well-known 'litmus test' used to distinguish between 'acidity' (chemical capacity to give energy) and 'alkalinity' (chemical capacity to receive energy). A 'red' reaction in the litmus test indicates acidity, a 'blue' reaction indicates alkalinity and a 'purple' reaction indicates 'neutrality' as a balance of each in the otherness.

In a way, this image symbolizes 'stages' of my own journey as a biologist interested in life forms themselves and ecologist, concerned with the 'environmental surroundings' of life forms as I approached and dived through the 'blue horizon of receptivity' into the natural inclusional awareness of 'each in the otherness':

- i. (Outside the vortex; thinking and doing as I was taught) **Organisms and genes, populations, communities and ecosystems** as 'objects' - 'units of selection' - 'wholes and parts'; 'things to be quantified, controlled, experimented upon, made predictable.
- ii. (Entering the vortex; staying in the red) **Organisms and genes, populations, communities and ecosystems** as 'dynamically bounded' - 'subjects of selection pressure and vacuum'; identities to be recognised and modelled dynamically, both predictable in the short term and unpredictable in the long run. **Developmental biology; Evolutionary ecology; epigenetics and 'hyperepigenetics'; sex, locomotion, growth, catabolic and anabolic metabolism; population and community dynamics, autocatalytic succession and development; speciation; reductionism; holism; conflict/competition; co-operation; contradiction; paradox.**
- iii. (Diving from definition into indefinability) **All form(s) as flow-forms, energetic configurations of space; each in the otherness; obviation of paradox, contradiction, conflict, co-operation, reductionism, holism through recognition of natural co-creativity and continuity; organic life as a dynamic inclusion of natural energy flow; evolution as cumulative energetic transformation via 'natural inclusion' - the co-creative, fluid dynamic, transformation of all through all in receptive spatial context.**

5. *What do you hope people will find of value in this book – and especially in your awareness of 'each in the otherness'?*

I hope people will find a spur for their imagination and an ability to find inspiration in their natural neighbourhood through more careful observation and consideration. I hope this will help people to question their assumptions, beliefs and what they have been taught *about* Nature, by asking themselves rigorously whether any of these is consistent with direct experience and whether it makes consistent, non-paradoxical sense. I hope this will help people to recognise what is consistent with their direct experience and does make consistent sense. I hope this will help people to recognise, without denigrating, their own and others' inevitably constrained knowledge of 'what is', 'what could be' and 'what will be' – and how learning more will always be possible through imaginative individual and collective enquiry.

The Hole of Education

Appealing to the Receptivity in the Heart of Learning

By Alan Rayner

There is somewhere *deep* in the core of our lives as human beings, which is vital to our capacity to live, love and learn as sensitive, sensible, sentient creatures. Yet, for millennia, our educational and philosophical systems have been Hell-bent on driving this place out of sight and out of mind. We have been teaching ourselves to think in a way that is socially and psychologically soul-destroying, rendering our classrooms and lecture theatres into a breeding ground for discontent and adversarial attitude. We have systematically replaced the joy of learning with the killjoy of inculcating what we consider to be hard fact, always keeping a watchful eye on the requirement to make students fit for purpose within economic and industrial machinery designed to sustain our superiority over one another and our natural neighbourhood. As we bear witness to our resultant ecologically unsustainable ways of life in dysfunctional communities riven by conflict, social disparity and despondency, we have removed our selves so thoroughly from that place within, through which we truly live, love and learn, that we have no idea how to recover our deep humanity. Bitterly and endlessly as we may complain about our ‘broken societies’, we cannot mend them without recognising how we came to break them in the first place through the development of a ‘whole way of thinking’ that objectively isolates ‘self’ from ‘otherness’.

So *complete* in its isolation of ‘self’ from ‘otherness’ has our *whole* way of thinking become, that when we despair at the fragmentation it has wrought, the only way we can imagine to ‘put ourselves back together again’ is to subsume our natural diversity within a ‘group whole’ or integral ‘oneness’. We then seek educationally to overcome the limitations of disciplinary specialisation and moral detachment by attempting to render every individual into a comprehensive ‘know-it-all’ within a comprehensive system. One way and another, we conflate multiplicity into one, celebrating the ‘wholesomeness’ of the ‘whole person’ and ‘whole system’. But this placement of all our eggs in one basket is just as unrealistic as it is to divide the universe into innumerable discrete localities, and for much the same underlying reason.

Rarely in this *state of complete* disregard for otherness do we pause to consider what *being* a self-sufficient, self-contained ‘whole system’ or ‘whole person’ would actually imply. Actually it would imply *stasis* – a permanent condition of evolutionarily suspended animation, with no capacity for transformational life, love or learning. That is the paradox buried deep in the foundations of our education systems, which arises from the definitive logic of *one and/or otherness*. We have embedded *incapacity to learn* in our seats of learning, by way of what William Wordsworth described as an ‘absolute, independent singleness’ – a figure isolated from its spatial context by *objective definition*. What this figure lacks, literally, is space in its centre and throughout and beyond its distinguishing boundaries, through and within which it can relate dynamically with others. It is a *point of mass alone*, or of *mass entirely conflated with space*. It is an *idealized integer* of *exactly* the kind that has been enshrined in the discontinuity between ‘something’ and ‘nothing’ from which the discrete numerical and geometric entities of both classical and modern mathematics are derived. It is the fallacious *means* by which we have reduced and confined our humanity to mathematically and logically definable objects and subjects, in order to serve the *end* of living out our desire for the false freedom and security of a life of absolute certainty and power over Nature. But what it actually serves is something very much at odds with our true self-interest.

The way out from this unnatural confinement is obvious (e.g. Rayner, 2004, 2006, 2010a, b, 2011). All that we have to do *mentally* is allow space – as it does *naturally and inescapably* as a frictionless and hence infinite, intangible and receptive *presence* that cannot be cut, confined, defined or occupied – to *permeate* within, throughout and beyond our *dynamic* bodily boundaries. We then can understand our bodily localities as dynamic *receptive holes*, energetically configured cavities of space in space, instead of as *inert wholes* pushed and pulled about by purely external forces. We make the *simple move from regarding space and boundaries as sources of discontinuity and discrete definition to sources of continuity and dynamic distinction*. This move is the basis for a *receptive, dynamic relational comprehension of space and boundaries* called ‘natural inclusionality’, (Rayner, 2011).

Viewing ourselves as ‘receptive holes’ makes a huge difference to the way we envisage our place in the world and attitudes to learning. We recognise both in our individual selves and others, our fundamental *needfulness* for the life-sustaining energy that distinguishes but cannot isolate our inner worlds from our outer worlds (Rayner 2010c). This needfulness is not the same as the competitive strength/selfishness or weakness/defectiveness of a supposedly self-contained Darwinian survival unit. It is intrinsic to our capacity and desire to live, love and learn as passionate, compassionate, co-creative creatures, which I evoke in the following poem and painting shown in Figure 1.

The Hole of Me

The hole of me
Calls endlessly
Into shape
Shifting flows
Currents of conscious
In unconscious
Presence
Explicit and implicit
Each in the otherness
Never forgetting
What comes in between
Where worlds coincide
But never collide
Except when confined
By limits in thought
That hold minds in thrall
Not hearing the call
That sounds in their midst
Through veils of mist
In echoes of silence



Figure 1. “*How Compassion fruits*” (From an oil painting by Alan Rayner on canvas, 2008). Life, love and suffering spring from the same source of receptive space that is present within, throughout and beyond the earth, air, fire and water of inspiring and expiring natural flow forms as energetic configurations. These natural figures dynamically balance receptive negative influence and responsive positive influence through the reflective zero-point core of their local and non-local self-identity.

To exemplify it in my own practice as a recently retired University educator, I always sought to speak both to and from this receptive capacity in the heart of myself and my co-learners. Correspondingly, I wanted to awaken capacities for imaginative and empathic forms of natural understanding and enquiry. With this intention in mind, I developed a trans-disciplinary final year course entitled ‘Life, Environment and People’ (‘LEP’) at the University of Bath. I presented LEP from 2001 - 2011. I included mathematical, artistic, social, psychological, cosmological, educational and technological as well as specifically biological and ecological topics. It was available to students studying for Biology, Natural Sciences, Psychology and Management degrees. Between 60-80 students typically attended each year.

Four fundamental educational principles underpinned LEP:

1. The explicit intention to learn *from* life science about our human relationships with our natural neighbourhood in ways that enhance quality of life.
2. Participatory and improvisational enquiry. Through a questioning and conversational approach, I encouraged students to express their personal views and knowledge for others to consider and learn from. I expressed my own understandings of 'natural inclusionality' (a fundamental quality of Nature and way of reasoning in which all form is distinguishable but not definable as variably viscous flow-form, an energetic inclusion of space throughout figure and figure in space) and 'natural inclusion' (an evolutionary process of co-creative, fluid dynamic transformation of all through all in receptive spatial context) as part of the process of co-enquiry. Nonetheless, I strictly regarded my role *only* as experienced guide to the terrain, *not* expert instructor. I worked to a guideline 'agenda', but allowed the conversation to evolve its own course within this.
3. Willingness to question and invite questioning of all kinds of assumptions and beliefs to assess their validity and open up possibilities for new ways of thinking and working.
4. Encouragement of diverse modes of enquiry and communication, including artistic and poetic forms that enable 'right-brain processing' to complement conventional analytical methodology and language. As well as formal essays, students were encouraged to produce one piece of informal or 'artistic' coursework. Every year this was a source of great excitement, co-creativity and pleasure, with students displaying a wide array of 'hidden' talents that they put considerable effort into bringing out into the open. See:

<http://www.youtube.com/watch?v=0RjNYfVVAmg>

and

<http://www.youtube.com/watch?v=9empiCQHLVA>

I hope that through this example I have 'opened eyes' to a very different educational approach from the self-fulfilling prophecy of pre-definitive praxis in which 'objectives' are set in advance and progress is measured only in terms of how *completely* these are met. With this move, a continual, fluidly open-ended or *indeterminate* process of cumulative and participatory learning is encouraged in which 'goal posts' – if they are set at all, and then *only* as a temporary measure or staging – are *allowed to change* as discovery continues. This process actually corresponds with what I call 'natural inclusion' – the fluid dynamic, co-creative transformation of all through all in receptive spatial context, which I think underlies both biological and cosmological evolution. It *does not* correspond with the pre-definitive theory of adaptive 'natural selection' described by Darwin as 'the preservation of favoured races in the struggle for life', which one way and another has infiltrated our so-called learning institutions.

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Sustainability of the Fitting – bringing the philosophical principles of natural inclusion into the educational enrichment of our human neighbourhood

Written in preparation for the opening keynote address at the 8th World Congress on Action Learning and Action Research, September 6th-9th, 2010 in Melbourne, Australia www.alara.net.au/worldcongress/2010/objectives

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Abstract

Learning is an evolutionary process that enables us to develop the abilities necessary to sustain our lives in a complex, changing world. The way that educators understand this process is liable to affect their practice in very fundamental ways. Where they follow an ‘adaptive’ evolutionary model, their practice is likely to be highly prescriptive, with specific ‘aims’ and ‘objectives’ defined by fixed standards and criteria for ‘success’ and ‘failure’. Such practice is, however, likely only to prepare learners *instrumentally*, for success in the short term, whilst imposing sharp restrictions upon the *inspirational* qualities needed to nurture their capacity for imaginative and coherent thought, curiosity and natural creativity for the long run. Moreover, it is liable to instill and reinforce a competitive, intolerant and materialistic ethos that militates both against any feeling of community belonging and against acceptance of individual or collective diversity and vulnerability. By contrast, a natural inclusional evolutionary understanding *reveals* scope for a more comprehensive, less hard-line improvisational educational practice, through recognition of the continuous, receptive presence of space everywhere. This practice effectively combines directional *focus* with all-round *circumspection*. It is both instrumental and inspirational in encouraging co-creative learning in diverse communities with fluidly tolerant and versatile qualitative and quantitative guidelines for evaluation of open-ended learning processes.

Foreword – Discovering My Hidden Kinship

Before I say anything else, I want to express my delight and gratitude in being invited here to contribute to a co-evolving educational scene that only ten years ago I didn't know existed. Back then, as a biological and ecological scientist with what I have come to recognize as a poetic soul and cavernous self-doubt, I was struggling to reconcile my passion and compassion for our natural human neighbourhood with the stridency of ultra-Darwinian, mechanistic and solely quantitative approaches to research and teaching that I am surrounded by to this day. This stridency was matched by an academic and political culture that worshipped competitiveness and economic enterprise, whilst despising and/or patronizing whatever it saw as human 'weakness', 'softness' or 'wetness'. I felt very lonely and useless and I broke. But as the mists began to clear, and I started to wander beyond the retaining walls of my academic discipline, I encountered voices suggesting that I was not quite as alone as I thought. There was a world of action research and self-inclusive participatory practice that corresponded closely with what I dearly wanted to communicate to my students and colleagues. This world was full of unfamiliar language and references to concepts and people I had never heard of in my closeted former life. But I felt I could see through this outer appearance to something deeply in common. One member of this world seemed to see the same possibility through my camouflage. He suggested we might learn something from one another through active engagement in each other's 'embodied knowledge' about what kind of influence embraced us both. He felt I had an original insight into the nature of that influence, which radically transformed his way of thinking. Maybe we could help each other to communicate about and spread that influence. Tough nut as he is, he signed his messages with 'Love'. So, here I am, hoping to help spread that influence in an original, honest, insightful and imaginative if not painless way. As I will explain more fully later, I do so not with the intention of providing a 'course of instruction' or 'persuasion', but by revealing what makes natural sense to me in the hope of opening up possibilities for others to consider and reflect upon from the perspective of their personal experience.

Introduction – The evolutionary nature of learning

My intention in this paper is to explore the ways in which our understanding of the process of learning – and how this process can be instigated and/or assisted educationally – is related to the way we understand evolutionary processes. Indeed, it has been through just such an exploration that my scientific background as a biologist and ecologist has reached into my personal pedagogical practice as a University teacher and *vice versa*. As a biologist and ecologist, I have been interested in how life forms simultaneously relate to and transform their habitat, in much the same way that a river system both shapes and is shaped by the landscape in and through which it flows. As an educator I have been concerned about how the quality of my pedagogy both influences and is influenced by the way students respond to what I offer them by way of both factual knowledge and imaginative and coherent understanding.

Learning entails the development of abilities that can sustain, transform and enrich our lives in a huge variety of ways. These abilities do not come to us pre-packaged and so can only be developed through our own and others' current and previous experience. As such, learning is clearly an evolutionary process of vital importance to the continuity and quality of human life. It also has the potential to bring pleasure and reward in its wake. Whether this potential is fulfilled, however, depends profoundly on *what* is learned, *why* it is learned and *how* it is learned, which depends in turn on the underlying evolutionary paradigm that is being followed and what assumptions this paradigm is based upon. If the underlying paradigm is flawed in some way, the experience may be anything but pleasurable and rewarding – at least not for the majority of those involved in the process. Just such painful personal experience, both as a student and teacher, has led me to enquire into the assumptions upon which current evolutionary and pedagogical paradigms are predominantly based. This enquiry has in turn led me, with the help of a few others, to seek and develop a new and to my mind more realistic understanding of evolutionary processes based on what I have called 'natural inclusion' as *the co-creative, fluid dynamic transformation of all through all in receptive spatial context* (Rayner 2006, 2007, 2008a,b).

I think that an appreciation of natural inclusion can bring about a radical involution in our educational approach and priorities that is consistent with the insights of living theory action research pioneered and described by Whitehead & McNiff (2006). But before I explore the meaning and evolutionary implications of natural inclusion in more depth and detail, I wish to reflect on both the strengths and shortcomings of selective models, epitomized by the notion of 'survival of the fittest' or 'preservation of favoured races in the struggle for life' (Darwin, 1859). Natural inclusion does not entirely extinguish and replace these selective models, which I think are based on a simplistic and damagingly misleading assumption that is nonetheless partially true. Rather, natural inclusion embraces, deepens and transforms the partial truth of selective models within the context of what I think is a more comprehensive and coherent understanding of evolutionary processes (Rayner 2004). This new understanding is founded in the post-dialectic *fluid boundary logic* of 'natural inclusionality' and *fluid transfigural logic* of transfigural mathematics, which recognise all natural form as *flow-form*, an energetic configuration of space in figure and figure in space (Shakunle and Rayner, 2009). Correspondingly, this logic moves on from opposing 'one' against 'other' or 'many' through their mutual exclusion of space to *including each in the reciprocal dynamic influence of the other* through their mutual inclusion in and of space (Whitehead and Rayner, 2009). It arises not from the *addition* of some new *connective construct* to currently predominant modes of thought in order to integrate everything into a continuous 'whole', but through the *revelation* of what is, always has been and always will be *present*, by way of *receptive*

and *transfigural* space. The treatment of this vital and truly continuous presence as a physical absence or 'void nothingness' is at the root of the paradoxical inconsistencies of abstract rationality that have dogged our understanding of evolutionary processes.

Adaptive Learning and Evolution

The relationship between organism and world is of critical philosophical, psychological and biological importance, but has always been open to diverse interpretations (Rayner and Jarvilehto, 2008). In selective evolutionary models, the world, habitat or environment is treated as no more than a source of stimuli or collection of factors that direct the organism's adaptive response. Learning is correspondingly interpreted as a product of interaction between two mutually exclusive systems, the organism as an autonomous or autopoietic, self-enclosed or enclosing system and the environment as its external hinterland. This purely interactive (action and reaction-based) view is evident even in some of the most non-reductive and recently developed models of self-identity and consciousness (e.g. Varela et al., 1991; Di Paolo, 2005; Thompson, 2007; Barbieri, 2007; Hutchins, 1995; Laland et al., 2000).

Deep in the foundations of selective models is the assumption of absolute discontinuity between a 'figure', as a material and/or energetic form or body, and 'space', as the figure's contextual 'ground'. Whereas 'figures' are treated literally as definitively observable and quantifiable entities, space is treated either as a passive physical absence – i.e. a void 'nothingness', or as fixed three-dimensional reference frame or dynamic *surface*. According to Einstein's General Relativity, the intensity of curvature of the latter 'tells matter how to move' (as John A. Wheeler has famously put it), while itself being determined by the mass occupying it in an ongoing dialectic of counteractive agencies. Either way, the boundaries of organisms, worlds and their contents are treated as discrete, fully definable limits, not – as in natural inclusionality and transfigurality – dynamic relational interfacing between truly *continuous* [i.e. not just adjacent or *contiguous*] inner and outer spatial realms (cf. Rayner, 1997, 2000).

The following simple exercise might help you appreciate the difference between the hard-line, space-cutting view of discontinuous models and fluid-line understanding of natural inclusionality and transfigurality. Draw an outline of two figures using a dotted line on a plain sheet of paper. The 'paper' stretched to infinity would represent what in the transfigural geometry developed by Lere Shakunle is called 'Omni-space' (Shakunle and Rayner, 2008b, 2009). The space within each figure represents 'Intra-Space', the space between figures 'Inter-space' and the space transcending the figures' permeable and dynamic boundaries 'Trans-Space'. You can see how the continuous non-

local space everywhere (omni-space') is locally configured into distinctive, but *not discrete* regions. In the way that you have drawn them, the figures are not contiguous (connected), and so their 'intra-spaces' can only communicate through the 'inter-space' and 'trans-space' between and permeating their boundaries as *energetic interfacings* and *restraining influences* (not *restrictive material definitions* or external *forces* – see later). Nonetheless, they still inhabit the same limitless pool of omni-space everywhere. If you were now to draw the figures closer together, so that their boundaries connect and coalesce at one or more points, their intra-space now becomes continuous (cf. Fig. 1). On the other hand, if you were to take a pair of scissors and cut around the dotted lines, the figures will drop out of their spatial context as discontinuous individual entities. This is what discontinuous models of reality effectively do – they treat boundaries as cut-out zones between discrete inner realms and outer realms, instead of dynamic relational interfacings through which these realms remain continuous through trans-space.

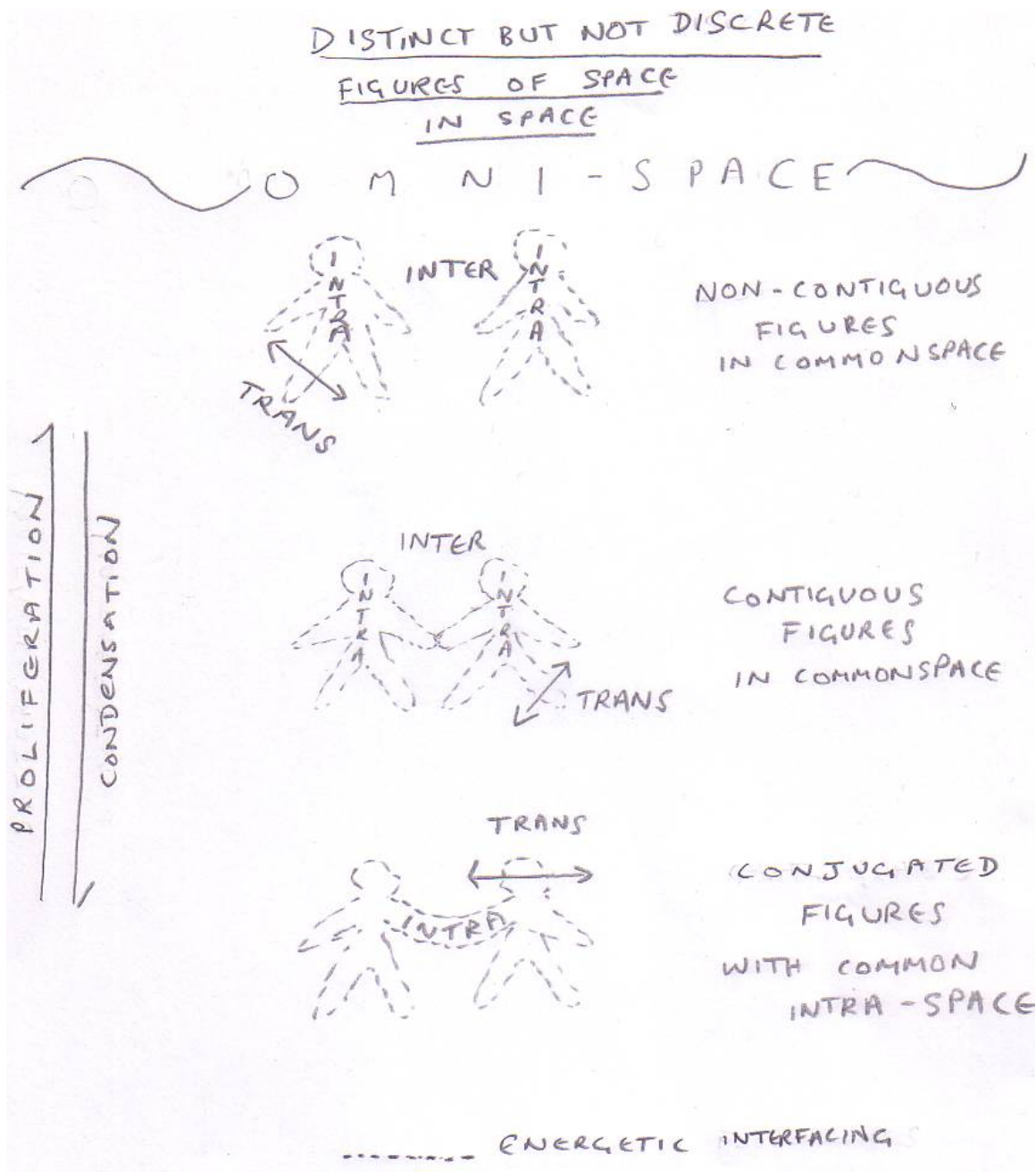


Figure 1. Figures of Space (Pencil sketch by Alan Rayner, 2010). This sketch illustrates the dynamic relationships between figural flow-forms as energetic configurations of space in figure and figure in space. It also serves to distinguish the natural inclusional dynamic relationship between distinct but not discrete flow-forms both from reductive schemas that cut off inner from outer spatial realms and from connectivistic and wholistic schemas where individual dynamic locality is eschewed from a seamless, purely figural whole. Since the cartoons can only represent an instantaneous 'slice' through the figures, the dotted lines shouldn't be taken to represent 'sieves' but more the seething 'fluid mosaic' that constitutes real biological membranes (as well as all kinds of other 'surfaces' that appear smooth, fixed and complete from afar, but are revealed as fluidly energetic with closer inspection - like the sea viewed from the perspective of an astronaut and a swimmer). A very simple example of what is represented in the cartoon can also be seen between surface-tense droplets of water condensing on a surface. As they expand and come into proximity their tensely curved inner-outer interfacing first touch and then coalesce in a visible rush as each flows reciprocally into the other and the tension of their boundaries is released (Aaaaaaaah!).

Meanwhile, no sooner is the dichotomy (cut-off) between organism and world as separate *whole* systems presupposed, than the scene is set for belief in an oppositional relationship between the two, whereby the genetic 'nature' of the 'one' is confronted by and required to adapt to the constraint (or, more optimistically, 'nurture') imposed by the 'other'. The outer world takes on the role of 'teacher', 'parent', 'school' or 'niche', whose exacting standards the inner world of organism has to comply with in the role of 'student' or 'offspring' if it is to be given the chance to continue. Where there are many such 'students' they are required to compete in a testing regime for the favour of the 'teacher' (in this case, the environment), which is only afforded to those at 'the top of their class'.

The incorporation of such thinking into modern human culture and the education systems through which it self-perpetuates is manifest in the familiar hierarchical class categorizations, power relations, conflicts and discriminatory practices that have spread globally. Virtually nowhere is the assumption questioned that competition brings out the 'best performers', whether amongst us human beings, or in Nature in general. There is, however, some recognition that competition can also bring out the 'worst' of us, by way of intransigent and reactionary traits of selfishness, enmity, dishonesty, arrogance, greed, insensitivity and cruelty. For example, appalled by the implications of his belief in Darwinian selection, Richard Dawkins (1989) has gone so far as to exhort: 'Let us try and *teach* generosity and altruism, because we are born selfish'! But I think that the real problem arises from continuing to teach ourselves to assume that we are born selfish, at the same time as using our mortal fear of annihilation as the primary motivation for learning the instrumental means of gaining advantage over others in order to protect the 'self-interest' that enables us to 'survive'.

I think we need to teach ourselves something that is both more inspiring and closer to the real truth of Nature, which enables us to understand what brings *love and vitality* as well as suffering and death. To do so, however, we will need to loosen some very rigid and deeply embedded practices and beliefs. This loosening will entail more than simply shifting the boundary of definition from Many *individual wholes* to One *group whole* in which all are connected and lose their unique local identity in a webby co-operative mass. Such a holistic move out of the reductive frying pan of fragmentation into the paralysis of all-oneness is based on the same totalizing assumption of material discontinuity from space as that which it sets itself against. Truly to get our selves out of the fix of the totalities we are so prone to trap them within, we will need to change our perception of the natural geometry of space and boundaries from *absolutely fixed* to *variably fluid* – which is the foundation for the natural inclusional understanding of all form as flow-form.

Meanwhile, what is *partially* true about selective models is that where there is simultaneous demand for resources amongst different localities within a finite locality, any disparity between these localities in their acquisitive capacity will enable some, and ultimately one, to overwhelm

others. This is the principle upon which notions of competitive exclusion, economic monopoly and social and agricultural monoculture are based. It's also what enables cancerous growth and invasive colonization, as well as such non-biological phenomena as flooding, volcanic eruption and river capture, to occur in the short term and ecological succession to occur in the long run – but these examples themselves provide a clue to the lack of viability of uniformity in the long run.

For any singular identity to be sustained indefinitely within a locality it must either be *entirely* self-contained and independent of others or the conditions and supply of resources that it needs – and to which it is most well-suited – must be constant. But this is not a realistic possibility.

To be entirely self-contained is to be an inert, closed structure with no capacity for take up or loss of energy between inner world and outer world. The nearest any life forms get to this condition is when they form 'survival capsules' such as spores, seeds, pupae and cysts that carry them through lean periods. This is what *real* biological 'survival' entails. In such a condition they are incapable of *any* growth, let alone competing or co-operating with others. But no sooner is any activity resumed that can support growth, so too is any life form's dependence upon its natural neighbourhood for resource supply and suitable conditions that are liable to change by dint of the activity itself. Such is the truth of the saying that you can't have your cake and eat it!

Hence the inescapable truth is that *the ecological and evolutionary sustainability of natural life forms, from the cells and tissues in a human body to the trees in a forest depend upon the diversity, complementary relationship and changeability of all within their neighbourhood, to which they themselves contribute*. When resources run short they pool and redistribute internal resource supplies within integrated structures and survival capsules – they do *not* compete to proliferate faster on the dwindling supplies than their neighbours. When resources are plentiful they proliferate and differentiate (Rayner 1997, Fig 2.) Moreover, as is beautifully illustrated by the exploratory patterns of some kinds of fungi, this ability to *attune* their capacity to differentiate and integrate activity *in dynamic relationship with* energy availability allows life forms to locate and sustain supplies in a heterogeneous habitat with extraordinary efficiency, though an interdependent *combination* of all- round *circumspection* and directional *focus* (Fig. 3). Correspondingly, if you're one of a group of survivors of a plane crash in a desert, it makes sense for all of you at first to fan out in different directions rather than all make for the same point on the horizon, hoping to find an oasis that way (Rayner 2008b).

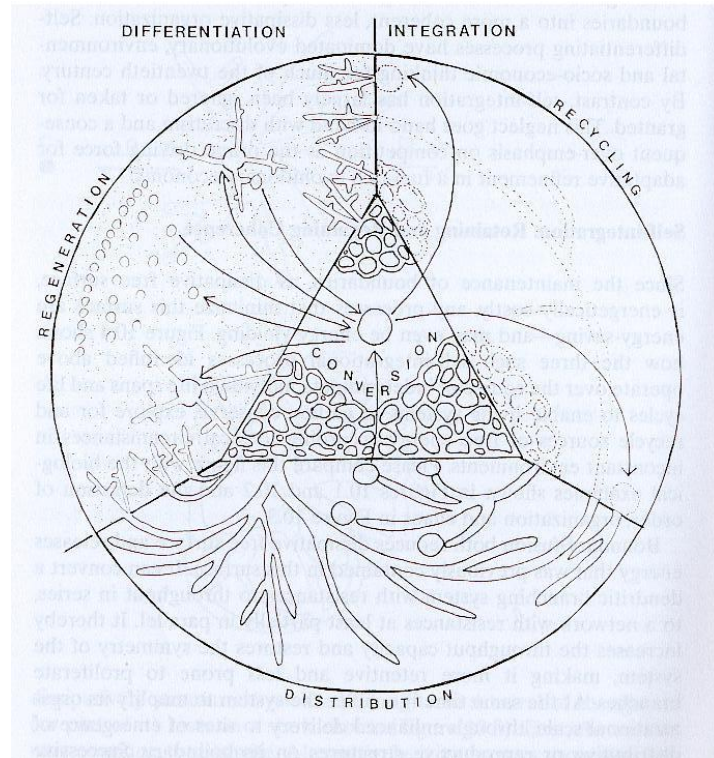


Figure 2. The interplay between boundary-proliferating ('differentiation') and boundary-condensing ('integration') processes in resource-rich (stippled) and resource-restricted circumstances. This interplay enables energy to be assimilated (allowing regeneration and proliferation of boundaries), conserved (by conversion of boundaries into relatively impermeable form), explored for (through internal distribution of energy) and recycled (via redistribution/reconfiguration of boundaries) in life forms in dynamic relationship with their natural neighbourhood. Thin lines indicate relatively more permeable boundaries, thick lines relatively impermeable boundaries and dotted lines degenerating boundaries. (From Rayner, 1997).

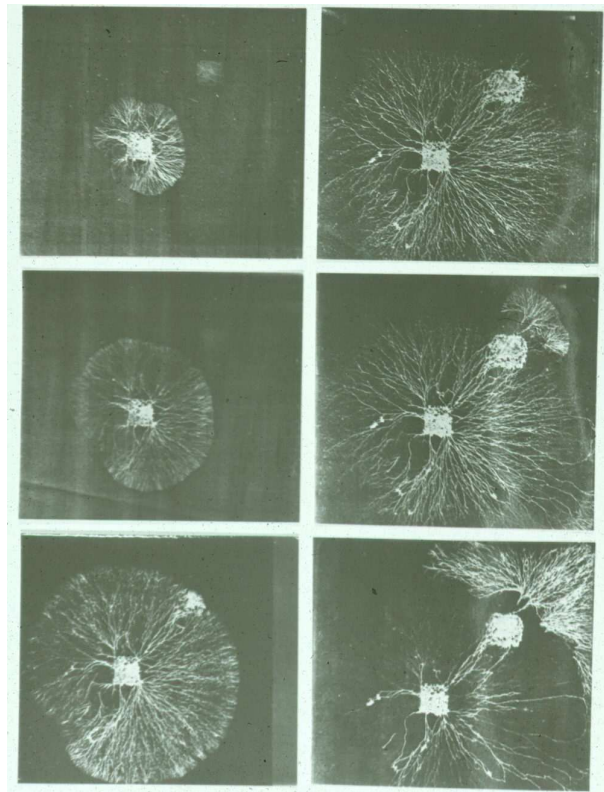


Figure 3. 'Fungal Foraging'. A fungus finds an oasis in a desert, by fluid-dynamically spreading and narrowing its energetic focus. The wood-decaying fungus, *Hypholoma fasciculare*, has been inoculated into a tray full of soil on a block of wood ('starter' food source), with an uncolonized wood block ('bait' food source) placed some distance away from it. Distinct stages are shown in the radial spreading of the fungal colony from the inoculated wood block, followed by the redistribution and focusing of its energy in one direction following upon contact with the bait. Similar fluid dynamic patterns of gathering in, conservation of, exploration for and redistribution of energy supplies are found throughout the living world, from subcellular to ecosystem scales of organization (From Dowson et al., 1986; see also Rayner, 1997).

Correspondingly, any growth that overwhelms what it depends upon isn't sustainable in the long run, no matter how profitable an enterprise it might seem to be in the short term. It seems, however, that selective evolutionary thinkers and their counterparts in government, economics and education aren't capable of combining the circumspection and focus necessary to appreciate these simple biological and ecological truths and their implications. This raises the question of what is getting in their way. Is there some deficiency in the workman or his tools or both? If so, how can this deficiency be made good, and how might this fundamentally change both our theory and practice? In the following sections I will consider four kinds of barriers to natural inclusional understanding, and how these could be opened up: *mathematical, cognitive, fearful* and *linguistic*.

Mathematical excommunication – singular numbers, cubical cubicles and depthless surfaces

In spite of and perhaps in some ways because of the advent of quantum mechanics, relativity and non-linear dynamical systems theory, the mathematical logic that imposes discontinuity between definable material figures and empty spatial ground continues to dominate and restrict thinking about evolutionary processes. Arithmetically, this discontinuity is evident in the treatment of 'natural numbers' as exactly definable points along a finite, width-less line. This line begins at a point and ends at a point and so stops short an infinitesimal distance from entering the space beyond the 'end of the line', which may be interpreted either as 'absolute zero' or as 'absolute infinity', depending on 'which end of the line' is being considered. This infinitesimal distance is nowadays interpretable in 'superstring theory' as a 'Planck length' or 'quark-string' - but neither of these can in reality be understood as the cut-off point of a singular figure without dropping it out of spatial context (Shakunle and Rayner, 2008a).

The upshot is that space is excluded from all numbers that can amount to anything, and so is treated as a purely external, empty and passive void. Only explicitly definable material forms can be *quantified* – counted and accounted for in this schema. Nature is treated as though it is constructed solely from discrete, absolutely discontinuous units – isolated entities or independent singularities. This begs the question of how these completely self-contained entities can move or change, given that by definition they cannot assimilate or emanate energy. With spatial communication channels materially blocked off, they either have to find the necessary *force* entirely within themselves as some kind of wilful free agency whose ultimate source or 'first cause' is unknowable, or outside of themselves in a power beyond definition and scrutiny. To rely on this inscrutable external or internal 'driver' as an explanatory principle can neither make sense, nor is it sustainable, because the power itself is necessarily consumed in the process of movement or change.

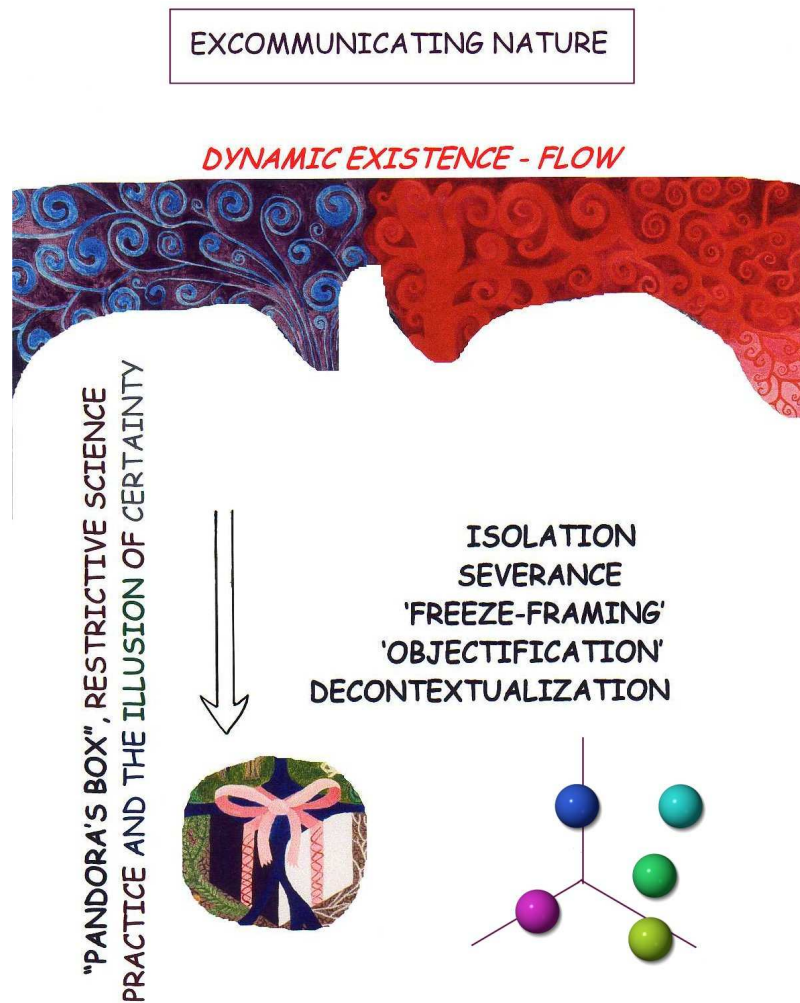


Figure 4. *How mathematical abstraction imposes discrete limits upon natural energy flow, thereby fixing what is dynamically continuous and without spatial limit either within three-dimensional cubical cubicles or upon the depthless surface of spheres*

The way in which structure is paradoxically both abstracted from and used to define space is also apparent in the framing of nature within an infinitely extended cubical box with a fixed centre but no outside. This is the basis for the idealistic geometry of Euclid, which paradoxically localizes the infinite (i.e. 'non-local' in the sense of 'present everywhere' or 'omnipresent') receptive presence of space within just three structural planes set at right-angles to one another. Through this geometry, space, time and structure are conveniently homogenized in a way that enables them to be packaged and quantified in independent, uniformly linear units that can be added, subtracted, divided and multiplied as whole entities and fractions according to the rules of elementary arithmetic (cf. Fig.4).

Even Riemannian and Lobachevskian non-Euclidean geometries do not escape this spatial restriction and associated material discontinuity in that they are confined to a *depthless curved surface*. Moreover, fractal geometry and the associated 'strange attractors' of chaos theory actually

originate in the subdivision of a pre-imposed rectilinear and discrete geometrical and numerical framework, even though they are vaunted as a departure from conventional mathematics (Mandelbrot, 1977; Gleick, 1988). Being based on non-linear processes, they are more representative of nature and do display some of the characteristics implicit in the dynamic inclusion of space, but they *begin* with the abstract localization of initial conditions and structural limits instead of allowing local form to configure dynamically within a non-local spatial context (Rayner, 2004).

The fixed geometrical and numerical framework of conventional mathematics that has become so unquestionable as a rigorous thinking tool was no doubt greatly reinforced by the apparent predictive success of Newtonian mechanics in describing the world as a set of moving whole bodies separated by empty space. According to this schema, all movement, or acceleration, deceleration or redirection of movement is measurable in accordance with fixed time intervals and attributable to calculable external force. Step-by-step, straight-line, sequential motion (linearity) is given precedence over curvature (non-linearity) and gravity assumed to be a property of mass alone. And yet, as Newton (1687) himself admitted: ‘I wish we could derive the rest of the phaenomena of nature by the same kind of reasoning from physical principles; for I am induced by many reasons to suspect that they all may depend upon certain forces by which the particles of bodies, by some causes hitherto unknown, are either mutually impelled towards each other, and cohere in regular figures, or are repelled and recede from each other; which forces being unknown, philosophers have hitherto attempted the search of nature in vain; but I hope the principles laid down will afford some light either to this or some truer method of philosophy’.

In truth, having reduced nature into neat discontinuous rectilinear packages, or dimensionless point masses stuck to a curved surface, it is impossible to regain natural continuity without implicitly re-including the space that was removed for the sake of arithmetic convenience in the first place. It doesn’t necessarily follow that what can be *derived* locally from a continuous energy flow is actually what the flow is made of, like a set of building blocks, as distinct from what the flow can make. The *pretence* that it is possible, as in calculus, to reconstruct natural flow from elementary discrete units is at the heart of the paradoxes of completeness that bedevil rationalistic argument and conventional mathematical ‘proofs’ (Rayner, 2004; cf. Hofstadter, 1980).

Correspondingly, a contiguous (i.e. *interconnected*) series of freeze-frames, as in a cine film, can only give the *illusion* of the original continuous movement, and yet our orthodox approach has made us unable to describe movement in any other way than by means of reducing it to successive locations in an abstract reference frame, as when we plot graphs and use differential calculus. The freeze-frames are abstractions from, not ingredients of the original. It may be mathematically convenient to reduce our selves and others to fit into the freeze-frames of discrete numerical statistics, but it grossly demeans the creative potential of our real life. It reifies the dichotomies between One and Other and One and Many that set the scene for conflict and cruelty to replace care and compassion by fixing the centre of self at the centre of all.

Now for the cognitive barrier.

Nature Beyond Definition: overcoming the cognitive illusion and fearful desire of organism-environment discontinuity

Getting Stuck

There is good reason to think that as terrestrial, omnivorous, bipedal primates unable to digest cellulose but equipped with binocular vision and opposable thumbs that enable us to catch and grasp, we are predisposed to view the geometry of our natural neighbourhood in an overly definitive way (Fig. 5). We see the world in terms of what it can do for us and to us as alienated observers or *abstracted* ‘exhabitants’, not how we are inextricably involved in it as *natural inhabitants*. We see ‘boundaries’ as the limits of definable ‘objects’ and ‘space’ as ‘nothing’ – a gap or absence outside and between these objects (Rayner, 2004). We see the figure but overlook the spatial ground. But what a disaster it would be for us if Nature did the same!



Figure 5. ‘Arid Confrontation’ (Oil painting on board by Alan Rayner, 1973). *This painting, made when depressed after a year of postgraduate research, depicts the limitations of the detached view of the observer excommunicated from nature. After a long pilgrimage, access to life is barred from the objective stare by the rigidity of artificial boundaries. A sun composed of semicircle and*

triangles is caught between straight lines and weeps sundrops into a canalized watercourse. Moonlight, transformed into penetrating shafts of fear encroaches across the night sky above a plain of desolation. Life is withdrawn behind closed doors.

Such fixed geometric representation of space and boundaries is not only inconsistent with but also greatly diminishes our understanding of natural fluidity. Like Shakespeare's Hamlet, we inaptly regard this fluidity as 'the slings and arrows of outrageous fortune (i.e 'chance') or a chaotic ' sea of troubles' to 'to take arms against..., and by opposing end them'. To avoid this logical trap of 'to be or not to be', and its associated conflicts and cruelties, we need to understand how its foundational premises have become enshrined in the mathematical underpinning of objectivist science, and how these can be questioned and realistically transformed.



Figure 6. 'Future Present' (oil painting on canvas by Alan Rayner, 1999/2000). *Natural diversity in fluid linings, beyond categorical definition. The painting portrays how, through natural inclusionality and transfigurality, we can understand the 'present' as a dynamic inclusion of 'past' in the coming of 'future', not as an abstract discontinuity between one and the other. Every local figure or moment is understood in fluidly continuous instead of static dissected terms. The painting also depicts the problems of 'genetic determinism', whereby the diversity of organic life on Earth is misinterpreted in abstract 'black and white' terms as the product of 'building blocks' of DNA instead of an expression of nature in embodied water flow. (Please compare with Figure 4).*

Several lines of theoretical and empirical research inferring interconnectedness or material-energetic linkage between organism and world have themselves opposed the kind of thinking that opposes what is within a 'figure' to the contextual 'ground' outside the figure. Dewey (1922) regarded human action as a system that always involves both parts of the body and environment and replaced the concept of organism-environment interaction with the concept of "transaction" stressing the *simultaneous* role of organismic and environmental constituents in behavior. At the same time, in biology, Uexküll (1932) developed Kantian ideas, stressing the connection between the organism and environment, and dividing the latter into two parts: die Umgebung or detached 'objective nature' and die Umwelt, as experienced environmental parts involved in the "Funktionskreis" connecting inner world and outer world. Meanwhile, although physiological processes were generally considered as something happening inside the organism, Haldane (1917) pointed out that the 'respiratory system' may only be conceived as a 'system' only if no border is set between the "inner" and "outer" air. A logical deduction was that all organisms belong together and a single organism is only some kind of a knot in a material web of life – a notion that has become central to modern holistic thinking, popularized by Capra (1996, 2002), Kumar (2002) and Laszlo (1996), amongst many others. Others who have followed this path of connectivism include Sumner (1923), Bentley (1941) Mead (1934), Angyal (1941), Lehrman (1953), Gibson (1979), Lee, (1994), Palmer (2004), Bickhard (1999), and Still and Good (1992).

Gibson (1979), in his ecological psychology, coined the term "affordance", referring to both the environment and the animal, which is implicitly if not explicitly related to the natural inclusional understanding of 'receptive space' (see below) and the ultimate mutuality of organism and world that has been emphasized by, for example, Oyama (1985), Lewontin (1991) and O'Regan and Noë (2001). Nonetheless, the focus on material-energetic linkage within 'whole systems' has generally obscured rather than clarified the vital dynamic relationship between figural and spatial presences that lies at the heart of understanding natural inclusionality. Some, like Bateson (1972, p.483), who said 'the *unit of survival* is organism *plus* environment' (my italics), have come to the threshold of this understanding only to be held back by attachment to connectedness and the all-confining whole.

At this moment, I invite you, my reader, to sit down in a chair, and to stare fixedly at your knee. Now, still staring, stroke your knee with your fingers. Now, continue stroking, but close your eyes. Now open them again. You might notice a tendency, when opening and closing your eyes, to change your perception of your knee. You may 'flip' from a detached, insensitive objectification of your knee as though it was 'out there' somehow disconnected from your body, to a feeling awareness of its presence as a subtly textured, dynamic aspect of yourself enveloped in and enveloping rather than isolated by space. Whilst our binocular vision, from eyes in the front of our heads helps us to differentiate one thing from another and so catch or grasp 'objects' and avoid obstacles, this exercise demonstrates how it also has a dislocating effect. It seems that the objectivity of pure

eyesight can dislocate your knee! It makes (air) space seem like a separating distance of 'nothingness' rather than a 'pool' in which we are immersed and gathered together.

When we close our eyes meditatively, we feel this pool around and within us as a vital 'presence of absence' rather than see (or rather, fail to see) what we take to be the absence of presence that comes between material objects. At the deepest level, we become aware of ourselves as gravitational inclusions of the universe through our sense of dynamic balance and acceleration. Unlike the standard 'five' senses of sight, hearing, smell, taste and touch, which are provided through organs (eyes, ears, nose, tongue and skin) explicitly detectable at the surface of our bodies, we tend to overlook or take for granted this 'sixth sense' or 'inertial guidance system'. Yet it is vital to our appreciation of our spatial situation and its potential as we experience the roller coaster of our everyday lives. It can literally take our breath away when the solid ground of our substance gives way and we begin to fall. Perhaps we fail to take account of it because the relational movements of our internal organs and the fluid in the semicircular canals of our inner ears from which it arises are hidden beneath our bodily surface. But by failing to take account of it, something, or, rather, somewhere vital can go missing from our conscious interpretation of nature and human nature, leaving us loveless and prone intellectually to replace our receptive 'centre of gravity' with an executive 'centre of control'. We can lose heart and create a culture of discontent.

As a corollary to this exercise, imagine air was water or, like a sheep or rabbit that you have eyes on the side of your head, giving panoramic rather than binocular vision. Does this change your perception of your surroundings and of yourself in relation to them? Are you less inclined to distinguish 'something' from 'nothing' and regard the latter as empty 'distance'? As we grow towards adulthood, especially when assuming roles as hunter-gatherers and protectors, so we come to rely more and more on our boundary-hardening, object-defining eyesight to learn about and gain influence over the world around us. We may even suppress our other senses or allow them to diminish, along with our emotional responses. In this way we can lose touch with reality, whilst imagining that we have a greater grip on it.

So, now we come to the fearful barrier.

Letting darkness in: the fluidizing dimension of natural inclusionality

The concepts of 'natural inclusionality' and 'natural inclusion' (Rayner 2003, 2004, 2006, 2007, 2008a, 2008b, 2010) continue to expand upon and deepen ideas of organism-environment

inseparability, as well as embracing the ‘theory of organism-environment system’ introduced by Jarvilehto (1998a and b, 1999, 2000a) within a new evolutionary philosophical and scientific paradigm. To reach this new paradigm, however, a very great conscious or unconscious human fear – the very fear that spurs the desire for power that imposes an unnatural order over other so as to try to ensure self-preservation – may have to be faced. This is none other than the mortal fear of uncertainty and loss that resides in Chaos and the archetypal Shadow of darkness in infinite nothingness (Jung, 1933). Only when this seeming void, the abyss of nothingness, is understood not to be an undermining absence but instead a vital omnipresence of *no-thingness* and source of loving influence, may we feel able to include it within the very core of our natural self-identity instead of attempting to cast it down beneath us or out beyond us.

The keyhole through which entry into this new paradigm can be found is hence somewhere that is literally everywhere, in front of our noses and up our nostrils. It is nothing less than the limitless presence of space as a receptive openness within, around and throughout the variably viscous natural flow-forms – the energetic configurations of space in figure and figure in space – that inhabit the cosmos, including ourselves. *Once aware of this presence we recognize the impossibility of defining or measuring anything in absolute numerical terms anywhere, because all form has both a ‘figural’, energetic boundary or ‘dynamic inner-outer interfacing’, which makes it distinct, and a ‘transfigural’ – ‘through the figure’ – spatial reach that cannot be sliced or limited.* The transfigural space throughout and beyond the figure pools it within the co-creative, influential neighbourhood of all others. Without it, figures become lifeless and loveless, stone-cold bodies, integral or fractional numbers and idealized geometric points, lines and solids. It is what has gone missing from our abstract perceptions of nature in terms of objective or subjective ‘parts’ and ‘wholes’. Its return brings our conception of figures back to life and love in the naturally creative evolutionary dance of figural and transfigural presences in each other’s inseparable company and mutual influence. We escape the confinement and inconsistencies of the definitive *fixed boundary logic* of ‘one opposed to other’ that has held our imagination to ransom for millennia, and move on to a more natural form of reasoning in the *fluid boundary logic* or *fluid transfigural logic* of each in the other’s mutual influence.

To put it another way, we move from the rigid abstract logic of one and/or other that excludes the middle, to the *fluid natural logic of the including middle* that includes each in the other. Instead of thinking about ourselves and others as either absolutely separate or inextricably connected, we recognise all forms as variably open to one another’s energetic influence. Our boundaries are energetic interfacings that make us distinct, as natural flow-forms, but not discrete, as independent singletons. There is no need to claim paradoxically that on the one hand there are ‘bounded wholes’ whilst on the other ‘there are no boundaries between them’. Equally there is no need to speak

paradoxically of 'an infinity of wholes', or indeed of an 'infinite whole' as a totality (independent singleness), which is a contradiction in terms (it is not possible to count up to infinity because infinity is a quality of space not a quantity of figures; neither is it possible to count down to zero, for the same reason).

Holding Openness

*You ask me who you are
To tell a story you can live your life by
A tail that has some point
That you can see
So that you no longer
Have to feel so pointless
Because what you see is what you get
If you don't get the meaning of my silence
Because you ain't seen nothing yet*

*You ask me for illumination
To cast upon your sauce of doubt
Regarding what your life is all about
To find a reason for existence
That separates the wrong
From righteous answer
In order to cast absence out
To some blue yonder
Where what you see is what you get
But you don't get the meaning of my darkness
Because you ain't seen nothing yet*

*You look around the desolation
Of a world your mined strips bare
You ask of me in desperation
How on Earth am I to care?
I whisper to stop telling stories*

*In abstract words and symbols
About a solid block of land out there
In which you make yourself a declaration
Of independence from thin air
Where what you see is what you get
When you don't get the meaning of my present absence
Because you ain't seen nothing yet*

*You ask of me with painful yearning
To resolve your conflicts born of dislocation
From the context of an other world out where
Your soul can wonder freely
In the presence of no heir
Where what you see is what you get
When you don't get the meaning of my absent presence
Because you ain't seen nothing yet*

*You ask me deeply and sincerely
Where on Earth can you find healing
Of the yawning gap between emotion
And the logic setting time apart from motion
In a space caught in a trap
Where what you see is what you get*

*And in a thrice your mind is reeling
Aware at last of your reflection
In a place that finds connection
Where your inside becomes your outside
Through a lacy curtain lining
Of fire, light upon the water*

*Now your longing for solution
Resides within and beyond your grasp
As the solvent for your solute
Dissolves the illusion of your past*

And present future

*Now your heart begins to thunder
Bursting hopeful with affection
Of living light for loving darkness
Because you ain't felt no thing yet*



Figure 7. 'Holding Openness' (Oil painting on canvas by Alan Rayner, 2005). *Light as a dynamic inclusion of darkness continually brings an endless diversity of flow-form to Life.*

As William Wordsworth recognized almost 200 years ago, 'in nature everything is distinct, yet nothing defined into absolute, independent singleness'. The discrete (completely definable) numerical units of conventional mathematics and assumed to exist by every objectivist science theory – including Darwin's adversarial notion of 'natural selection, or the preservation of favoured races in the struggle for life' – cannot and do not exist in the variably fluid cosmos we actually inhabit. Evolution cannot proceed through the paradoxical imposition of external, selectively judgemental force upon singular subject-objects. Evolution can only proceed through natural inclusion – *the co-creative, fluid dynamic transformation of all through all in receptive spatial context.*

Within the limitless pool of receptive space and its vital inhabitants I think we can find an understanding that brings hope of a more creative, sustainable and loving future for humanity and our companion life forms (cf. Fig.6). But in no way do I underestimate just what an enormous upheaval this may bring for the way we imagine and live our lives. To sustain this understanding depends on the *imaginative* and *coherent* capacity to hold *both* the **figural** (local energetic configuration of space) *and* **transfigural** (nonlocal continuous depth/openess of space) *simultaneously* and *dynamically* (i.e. fluidly) in mind. One then 'sees' in the mind's eye the 'warm geometry' of a continually reconfiguring, variably viscous, dancing evolutionary flow of natural form as space in figure and figure in space – not unlike the flow of a 'lava lamp'.

In essence, the dynamic, mutually inclusive interplay of the fluidly figural (energetic) and omnipresent transfigural (space) is very simple and should be effortless to envisage. But within the cultural context of habitually 'hard-lining' things as complete, abstract, idealized figures it may require considerable effort. This culture leads us paradoxically to try to unify physical laws into a single formulation by imposing disunity (i.e. discontinuity) on natural energy flow, driven inscrutably from within or without an abstract cut-off zone. There is then always a tendency to default to the literal, definitive imagery of the figure alone in which we literally *lose imaginative sight* of the truly *continuous* transfigural space that *pools all gravitationally together* in a *natural communion* of each in the other's reciprocal influence. This leads us to contemplate only the possibilities of the absolute interconnectedness (*contiguity*) or absolute separateness (*discontinuity*) of material or energetic form in a false dichotomy and dialectic of each opposed to other, allowing greed, power and profit motives to run riot in an unsustainable relationship between human aspiration and natural need.

It may hence take even more imagination, together with a huge breadth and depth of scholarly knowledge and intellect, to envisage the *implications* of natural inclusional imagery for understanding our natural neighbourhood and to appreciate how this involutes (turns outside-in) the freeze-framed, oppositional concepts of abstract rationality into the fluid understandings of complementary reciprocity.

Correspondingly, there is a historical pattern that repeats itself again and again through different kinds of intransigent local or non-local denial of the other, when the receptive presence of transfigural space and associated responsive-reflective figural presence of dynamic interfacing/boundaries is *neglected* through inadequate mental imagery of one kind or another.

Both environmental and soulful devastation can arise from this neglect (cf. Fig. 5). In broad outline, the pattern may be represented as follows:

Primordial wishy-washiness --> Rigid Definition --> Abstract

Reductionism/Pluralism/Dualism/Fragmentedness --> De-definition --> Wishy-washiness --> Re-definition --> Holism/Monism/Oneness/Wholeness -->?

This pattern of neglect and denial may be related to an actual human condition called 'unilateral neglect' which follows damage to one brain hemisphere or other (most usually the right hemisphere) and results in inattention to one half of the visual field (the left half, if the right hemisphere is damaged). In a similar kind of way, the predomination of analytical over intuitive thought, or vice versa, may involve inattention to or lack of communication with what the other half is offering.

By excising/occluding the middle ground of transfigural space, rationalistic 'left brain hemisphere' perception becomes satisfied that it has completely accounted for Nature, by defining everything as a discrete material body within a discrete frame of space/time, and in so doing liberated humanity from the imprecise 'wishy-washiness of 'right brain hemisphere perception' (cf. McGilchrist, 2009). Nature is divided up into innumerable, discontinuous, purely material parts and wholes that can be ruled into order according to the Laws laid down by a single sovereign authority. The most common upshot is reductionism and monotheism.

'Right brain hemisphere perception', meanwhile, recognizes the limitations of the reductive view and seeks to remove the definitive boundary limits imposed by it. The reductive view vehemently opposes this seeming assault on its integrity (which comes with a false and paradoxical sense of absolute security and freedom) by reinforcing its boundary limits as much as it can. But if it feels the discomfort that arises from its restrictive definitions, it may eventually be unable to resist collapsing into the nihilistic, angst-less, no-self world of wishy-washiness (nirvana/ La la land) coming from pure right-hemisphere perception. Once in this no-self world, however, left hemisphere perception may spring back into action to recapture a sense of local definition (completeness) at the global scale of the 'Whole' as 'Oneness' (i.e. the rigid definition gets shifted from individual to collective, microcosm to macrocosm), and sticks there. Meanwhile, the third, natural inclusional way of viewing each fluidly in the influence of the other through transfigural space gets overlooked in the war of mutual contradiction between the 'Many' and the 'One'. Evil

emerges through the unnatural exclusion of darkness, not its natural inclusion as a receptive presence.

If transfigural space is imaginatively included, however, we get:

Primordial wishy-washiness --> Fluid Distinction --> Natural Inclusional/Transfigural/Three-in-one locality (somewhere) in non-locality (everywhere)

In a world of endless co-creativity.

The ability to *distinguish*, but not necessarily *define* unique identities is a vital condition for intervention and participation in the world. A newborn baby may have no such sense of distinction between self and world, so that all that happens seems to happen to itself. The experience of meditative trance and what some have called ‘no –self’, ‘core consciousness’ and ‘inspiration phase’ mental activity (Harding, 2000; Damasio, 2000; Claxton, 2006) may correspond with this lack of distinction and openness to all possibility. With the development of co-creative relationships with other people and outside world, however, the child needs to make distinctions between her/his body and others in order to receive, respond to and provide directional guidance. An objective/subjective ‘self-consciousness’, ‘extended consciousness’ and ‘elaboration phase’ mental activity develops (Harding, 2000; Damasio, 2000; Claxton, 2006), along with an awareness of personal joy and pain through learning experience of self-inclusion in natural neighbourhood. As this takes hold – and may even be regarded as a ‘superior’ form of ‘intelligence’ (Damasio, 2000; Claxton, 2006; cf. Harding, 2000) it may, however, harden into objective self-definition and the rationalistic idea that something that happens to other people does not happen to ‘me’. With this hardening comes the loss of compassion that allows the intransigent and abusive mentalities to predominate.

With further cognitive development it is possible that the disconnected adult, who hardens natural distinction into abstract definition, may start to realize that the natural *spatial communion* (as distinct from energetic-material connectedness) between self and world was, however, never really cut – and couldn’t be cut because space can’t be cut and hence *doesn’t stop at boundaries*. But this further, natural inclusional realization entails a radical transformation of perspective that can meet strong and fear-full resistance from those feeling empowered by their mental detachment to have a sense of freedom, security and dominion over other. This feeling is reinforced by convenient but simplistic objective logic, methods of quantification and calculation, and *language*.

Overcoming Linguistic Definition: The fluid logic and language of natural inclusion

Just as a river is both shaped by and re-shapes the landscape through which it flows, so our human use of verbal language to communicate with one another about what we are *observing, thinking, feeling* and *imagining* is both influenced by and influences our worldview. Language can hence both confine and liberate us. It can reinforce the deep entrenchment of habit that cannot break out of the familiarity of its past enterprise. It can also help to locate and open up the escape channel that enables a shift of course.

With the development of inclusional concepts, a new logic and principle of the '*including middle*' emerges in which the *inhabitant* is a fluid expression of the habitat, not a rigidly definable exception from it, as the worldview of objective rationality would have us believe. Content simultaneously forms from and responsively gives expression to the receptive spatial pool that it fluid dynamically includes and is included in; the inhabitant transforms the habitat and vice versa as inseparable but distinguishable aspects of one including the other, nested over all scales from microcosm to cosmos. Understanding inclusional flow entails the dynamic relational, space-including, local-non-local logic of 'somewhere distinct as a dynamic informational inclusion of everywhere spatial throughout', not solely the local logic of discrete, opposing, material objects.

So, what kind of language can best communicate this new, fluid logic and principle that recognises dynamic distinction but not rigid definition and so calls into question so much of our familiar way of thinking in terms of discrete whole objects and sequential cause and effect? Clearly, any language which originates in rationalistic logic will reinforce that logic and so tend to be inconsistent with and to obscure inclusional meaning. This problem may be deepened if the role played by the narrowed down focus of our left brain hemisphere in the production and comprehension of verbal language comes to predominate over the more intuitive, all-round awareness yielded through our right brain hemisphere (McGilchrist, 2009). If we are not very careful, verbal language is very liable to entrap us unimaginatively in 'tunnel vision' and to lose imaginative 'circumspection' (cf. Fig. 3.). But we need inclusionally also to be careful not to allow our awareness of this problem to lead us to disown verbal language and get caught forever instead in the trap of meditative paralysis where nothingness and blissful inaction prevail. Words and action are interdependent, both vital to our human co-creative potential as social flow-forms inhabiting a common hearth.

For me, awareness of this problem in itself suggests its solution: to be prepared to loosen the definition of verbal language in ways that allow it to come alive and attune dynamically with our continually transforming evolutionary circumstances. A living, evolutionary logic needs a living, evolutionary language if it is not to tie itself up in knots of paradoxical inconsistency. This language needs to bring the focused and circumspect perceptions of left and right hemisphere together through the communication channel of the corpus callosum that includes each in the other's influence, not to drive them apart through intransigent neglect and severance.

What this means in practice is learning to use language *poetically*, to evoke meanings and acknowledge dynamic distinctions, not *literally* to impose abstract definitions on natural flow-form. This is why I have come to use language with very great *care*, seeking to avoid the pitfalls into the totalizing definitions of both reductive and holistic thought whilst recognizing as well the co-creative complementary contributions such thought can bring to human understanding when brought into dynamic synthesis. Of course I recognize that this is not easy. It is never easy to break deeply embedded habits. I struggle to find the expressions that consistently convey my meaning, whilst not departing utterly from the familiarity of past usage. I am frequently accused of esotericism, of trying to hide my meanings behind a smokescreen of jargon – which is as far from my real intention as it could be. I am frequently accused, if I point out the rationalistic implications of familiar expressions, of trying to impose my language on others – which again is as far from my real intention as it could be. I am merely trying to invite consideration of what kind of language is consistent with natural inclusional meaning, and offering the best that I can at the time of writing or speaking, always prepared to change this if a more effective expression surfaces that doesn't simply re-entrap in rationalistic imagery. This is a great challenge for *me*, and, I suggest, a great challenge for *us* if we are to overcome our language impediment and make our living educational theory and practice more naturally inclusional.

The transfigural mathematics and physics of the *including middle*

So, to return to that other kind of definitive language impediment that gets in the way of natural inclusionality. So deeply embedded has conventional mathematical misrepresentation of nature become in our modern scientific, economic and technologically dominated culture that as long as it remains unquestioned, it can only reinforce the simplistic representation of a local figure as a discrete individual identity or 'absolute independent singleness' and 'one aloneness'. Moreover, this problem will remain entrenched as long as space is mentally isolated from matter and treated as an absence or gap that literally counts as nothing, whereupon points along and beginning and ending a line are inevitably discrete, and can only be contiguous (adjacent) not continuous (in common space or communion).



Figure 8. 'How Compassion Fruits' (Oil painting on canvas, by Alan Rayner, 2008). *Life, love and suffering spring from the same source of receptive space that is present within, throughout and beyond the earth, air, fire and water of inspiring and expiring natural flow forms as energetic configurations. These natural figures dynamically balance receptive negative influence and responsive positive influence through the reflective zero-point core of their local and non-local self-identity.*

A new system of numbers and geometry has, however, been developed, called 'transfigural mathematics', which, I think, solves the problem of continuity through the natural inclusional logic of dynamically including space in figure and *vice versa*, through *transSpace* (Shakunle 2006; see also Fig. 1). Correspondingly, rather than treat numerical identities as dimensionless points along a discrete line, and so in effect excluding the receptive space of both zero and infinity, this mathematics envisages numbers as dynamic relational neighbourhoods. Here, overlapping local informational spheres of non-local spatial influence form a 'dimension-full line' or 'channel' (cf.

Shakunle and Rayner, 2007, 2008) in which reciprocal, spiralling inflows and outflows are dynamically balanced through inner core identities called ‘zeroids’ (from *zero identities*). The zeroids sustain a simultaneously receptive, reflective and responsive fluid relationship with their immediate environmental neighbourhood, and through this neighbourhood with all Nature. There are two distinctive ways in which flow and counter-flow are dynamically balanced in the resulting flow-forms. What is called ‘odd-balancing’ produces channels whose intra-space communicates along linear series of local figural identities. This gives rise to what are conventionally regarded as ‘material bodies’. What is called ‘even-balancing’ produces flow-forms whose intra-space communicates in circuits, corresponding with what is conventionally regarded as ‘electromagnetic radiation’. Hence we have the basis for dynamic relationship between ‘all-round circumspection’ and ‘directional focus’ that is key to understanding the kind of pattern shown in Figure 3.

Modern physical understanding of dynamic processes of all kinds, from subatomic to universal scales and encompassing the evolution of living systems, continues to be restricted by the rationalistic treatment of figural boundaries as discrete limits and space as fixed, empty distance between material objects. Such treatment is not scientifically rigorous – much as its proponents might claim it to be – because it is rooted in a presumption that is not consistent with evidence and does not make consistent sense. It threatens our potential to live in a sustainable way, in dynamically attuned relationship with our natural circumstances and one another. Its inadequate models are liable to be deeply misleading in the long run. As I have indicated, such treatment is founded mathematically in the abstract geometry of Euclid and arithmetic of discrete numerical units, which formed the basis for Newtonian mechanics and the development of objective, quantitative science aimed at prediction and control. It is, however, profoundly unrealistic in being based on the illusion that matter ultimately consists of solid, massy particles *surrounded* by (and hence *excluding*) non-interactive space. This illusion leads to the dualistic ‘paradoxes of completeness’ that underlie the interpretation of change as the consequence of *applying energy as purely external force* upon *discrete* (isolated) and hence independent bodies (cf. Hofstadter, 1980). It leads damagingly to the mental exclusion and objectification of ‘environment’ as ‘external surrounding’ that the ‘self’ both exploits and struggles against, not the natural neighbourhood of which the ‘self’ is inescapably an inclusion.

Here a fundamental difference between rationalistic and natural inclusional/transfigural perceptions of continuity emerges:

1. In rationalistic thought, continuity is equated with ‘connectedness’ because space is regarded as void, a source of discontinuity or disruptive gap between and around ‘things’ as discrete objects.

Hence the only way of deriving continuity in this ‘whole way of thinking’, is either by totally excluding space and boundaries from form as a continuous line or network of width-less threads, or by totally conflating space with form in a seamless [boundary-less] whole. Such exclusion or conflation is neither consistent with evidence/experience nor does it make consistent sense. In a way, it is a product of holistic wishful thinking that seeks to eliminate rather than reconcile the occurrence of natural distinctions, because these are seen as a source of disharmony. It is an over-reaction to the over-definition of boundaries characteristic of analytical thought, which seeks to replace the latter with its antithesis instead of seeking the dynamic synthesis and balance that natural inclusionality/transfigurality provide (Rayner, 2004).

2. In natural inclusional and transfigural thought, space is a continuous omnipresence that cannot be cut, confined or excluded, and form is **dynamically continuous** through its energetic inclusion of space in figure and figure in space. Distinction and difference are hence accommodated in a natural fluid continuum, without contradiction. Local identity is recognised as a dynamic inclusion of non-local space in which all forms are pooled together (but not absolutely merged) in natural communion as flow-forms.

3. Correspondingly, the treatment of continuity by abstract rationality as the same as connectedness – as exemplified in conventional calculus, where continuity is approximated by connecting infinitesimal discontinuous units – is an idealized construct that is physically impossible. The very idea of complete ‘whole units’ existing anywhere, at any scale in Nature as an energetically open, fluid system does not make sense. Natural inclusional and transfigural connectedness arises from the coming together (attachment/inter-connectedness) and fusion (conjugation/intra-connectedness) of energetic paths, corridors or channels of included space (intra-space) in labyrinthine branching systems and networks, not the ‘ties that bind all into a web of one’.

Natural inclusionality and transfigurality open up, through the vital inclusion of transSpace, a radically more creative, realistic and ultimately less environmentally adverse understanding. Instead of regarding ‘space’ and ‘boundaries’ respectively as ‘gaps’ and ‘cuts’ that impose discontinuity between discrete material objects, these are understood as sources of continuous receptive influence and energetic interfacing that makes distinct but not discrete throughout Nature as a limitless pool. With this understanding, I think that new insights of the fundamental nature of gravity, heat, energy, matter, space and time become possible, along with a new mathematical foundation for their natural representation. Long-standing dichotomies between particle and wave, observer and observed, certainty and uncertainty, electromagnetism and gravity, free energy and entropy, and

correspondingly deterministic and stochastic models of reality melt into fluid flow-form. 'Energy' becomes understood not as a source of executive *force*, independent from space, but as a source of figural *influence* inclusive of space. And with that turn-around, comes a new perception of self-identity.

'I-opening' - the natural inclusional self in educational theory and practice

So what does the natural inclusional self look like in practice? Does it have an inclusional practice, a way of behaving, which can be learned? What kind of theory might underlie this practice?

From what I have already said, it is clear that inclusional ways of living, loving and learning emerge from an attitude of mind and heart, not from following a set procedure or boning up on written texts whose words cannot in themselves convey the depths of feeling and intuition involved. This attitude is intellectually justifiable in terms of an understanding of natural energy flow as the dynamic inclusion of space in form and form in space, which contrasts with the fixed, definable form assumed by objective rationality to be the primary, default condition of Nature.

But this doesn't mean inclusionality can only be practiced by an elite class of people with esoteric knowledge and understanding. Indeed, if anything, inclusional behaviour comes most naturally to anyone whose attitude has not been restricted by the restrictive theories and practices that we have been teaching ourselves for millennia.

Inclusional ways of relating are correspondingly most evident when we feel relaxed in surroundings and company that we love – especially beyond the confines of what many of us regard as our *workplace*. And therein may lie a lesson in itself – that we experience most difficulty in living a life of 'self as neighbourhood' in settings that we have come to associate with *work*. For it is just in such settings that we have used fixed assumptions of objective rationality to *entrain* and control ourselves as unthinking robotic followers of instruction in restrictive practices – not *educate* ourselves into a wider awareness of our human creative potential.

It is as though we regard work not as a source of mutual sustenance and pleasure, but rather as a stern obligation of what we must do to survive in the harsh reality of life as a battleground, not the adventure of life as a playground. This is most painfully obvious when the workplace really is a battleground. Here is how John Keegan (2004) describes military training:-

'...the deliberate injection of emotion...will seriously hinder, if not altogether defeat, the aim of officer-training. That aim...is to reduce the conduct of war to a set of rules and a system of

procedures – and thereby make orderly and rational what is essentially chaotic and instinctive. It is an aim analogous to that pursued by medical schools in their fostering among students of a detached attitude to pain and distress... the rote-learning and repetitive form and the categorical, reductive quality ...has an important and intended psychological effect. Anti-militarists would call it depersonalizing and even dehumanizing. But given...that battles are going to happen, it is powerfully beneficial...one is helping him to avert the onset of fear, or, worse, of panic... ’

Here it is all too clear how the assumption that conflict is inevitable becomes a self-fulfilling prophecy, which rationalistically objectifies the person by excising or confining the limitless space that brings uncertainty and vulnerability (and love) and imposes in its place a rigid frame of deadening predictability. The ‘self’ is sustained in a confrontational stance as an automaton or living contradiction of its natural neighbourhood through mindless and heartless routine and ritual, in which learning is reduced to rehearsal for one kind of prescriptively staged performance or another. Sense, sensibility and creativity are ruled out by rules and regulations of pride, prejudice and habit that define what can and what cannot be accepted by the *status quo*.

The resultant habitual patterns of thought and behaviour subservient to prescriptive codes of conduct and practice are evident throughout modern human culture in the hierarchical and adversarial design of our academic, governmental, industrial, commercial, religious and sporting organizations. Everywhere, this design impedes evolutionary possibility through the imposition of megalithic structures that oppose change. It even projects itself onto instead of learning from the energy flow of non-human nature, exemplified by the Darwinian oxymoron of ‘natural selection’ as the ‘preservation of favoured races in the struggle for life’.

Such thinking cannot, by its very nature, solve the enormous environmental, social and psychological problems of its own making that humanity sees as confronting itself at the beginning of the twenty-first century. It is its own worst enemy.

This is where the transfigural and natural inclusional way of thinking about ‘self’ could help greatly. It becomes possible not to regard ‘self’ as a ‘fixed locality’, stuck forever in the same old skin, with the same old genes controlling its every move, on course for inevitable competition and conflict. Instead self is understandable as a dynamic locality of its non-local natural neighbourhood, capable both of changing and being changed by its circumstances, like a river in landscape that is never the same twice. This is essentially how inclusionality provides the kind of ‘unhooked thinking’ that can help us out of the helplessness (often ‘learned’ and culturally enforced) of assuming habitual

behaviour is pre-ordained - a 'problem with us' as singular individuals, as distinct from 'a problem for us' as 'living neighbourhoods' (Pryor and Rayner, 2005a,b). And in getting our selves 'off the hook' it may be possible to unleash enormous creative potential that is inherent in our capacity for 'play'.

Here, a cognitive or 'mental imaging' difficulty that many people have with deeply understanding natural inclusionality may arise through confusing 'presence' with 'tangibility'. If 'space' is to be recognized as a 'presence', this makes people to try to make it 'substantial' in some way, for example as 'aether', 'space-time fabric', 'dark matter', 'dark energy', 'subtle energy', 'dark flow' etc. No sooner do they do this, than it becomes definable and/or divisible in some way as a singular 'whole' (independent singleness). Since this doesn't make sense - because you can't cut or resist what has no tangible resistance - the mind may then revert to regarding 'space' as 'absence' or 'nothingness', which can't 'interact' with 'tangible form' and so is regarded as a source of discontinuity and distance between one form and another.

This is the foundation of 'mind-matter' and 'one-many' dualism/dichotomy (Rayner and Jarvilehto, 2008), from which there is no escape *unless* the key insight of natural inclusionality and transfigurality is appreciated - that 'space' is neither 'nothingness' nor 'somethingness', but 'no-thingness' - intangible, non-resistive, continuous (and thereby transfigural) presence, which figural (energetic) presence can dynamically configure/relate through but not inter-act with (Shakunle, Rayner, 2008). No energetic boundary can resist the transfigural omnipresence of space - it is itself a dynamic configuration of space - it can only offer variable degrees of resistance (impermeability) to figural presence.

Correspondingly, a 'living I' cannot be a hermetically sealed, autonomous unit isolated from its neighbourhood, because the space within its distinctive but not absolutely definitive bodily boundaries is continuous with the space beyond these boundaries. It finds identity not in its inner self, alone, but in its variably receptive, reflective and responsive energetic relationship with its limitless and changeable surroundings. It lives as an energetic inclusion of space in figure and figure in space, a natural dynamic inclusion of its context. It is a 'natural inclusional I', not an 'abstract I'.

All in all, a natural inclusional evolutionary understanding of self-identity provides scope for a more comprehensive, less hard-line improvisational educational practice that effectively combines directional *focus* with all-round *circumspection*. This practice is both instrumental – as a source of

knowledge, and inspirational – as a source of understanding, in encouraging co-creative learning in diverse communities with fluidly tolerant and versatile qualitative and quantitative guidelines for evaluation of open-ended learning outcomes. Instead of instructing our selves to conform to pre-selective standards, we truly educate our selves to become involved in an ongoing process of ‘natural inclusion’ – the fluid dynamic, co-creative transformation of all through all in receptive spatial context.

Exemplifying the natural inclusional self in my own educational practice?

So, the question is, how representative am *I* of the natural inclusional self in my own educational practice? How could I claim to know? How can I avoid the danger of narcissistic self-reference at the same time as avoiding the danger of objective self-exclusion? These are questions that I know have much exercised action researchers and living educational theorists, whose reflective-reflexive, participatory and invitational space-opening practice epitomizes what comes naturally from a perception of ‘self as neighbourhood’. Often this practice is justified in terms of emotional values, such as a burning desire for social justice, a commitment to environmental sustainability or recognition of the need to take account of individual uniqueness and embodied knowledge. What I am hoping this paper may have helped to bring out is that this practice is intellectually as well as emotionally justifiable. It is the product of a kind of logic that is consistent with evidence and makes consistent sense – unlike the abstract forms of rationality that exclude sensitive and sensible feeling by excluding the limitless pool of receptive space from their focus on figures alone as inscrutable ‘drivers’. Natural inclusionality, to my mind can be regarded as a new kind of ‘rationality’ that doesn’t divide our human experience up into discrete ‘rations’, deprived of what is vital to our capacity to live, love and suffer.

But, to return to my question, I will offer this example. For the past ten years, I have taught a final year transdisciplinary undergraduate course at the University of Bath, entitled ‘Life, Environment and People’ (see my description of some of the turbulent and difficult history of this course in Rayner, 2006a). Every now and then as I present this course, which is participatory and invitational in style, I find myself having to stop and remind the students and myself about its fundamental intention. I say something along the lines of: *'this is not intended to be a course of instruction, but more an opening of possibility for your personal reflection and consideration by describing what makes sense to me'*. I could say much the same about all of this paper. I feel the need to say it because I think that the expectation of instruction - and the painful memories of non-empathic

schooling - that this can evoke and be read into what is offered, blocks receptivity. I have simply to *admit that I can only explicate my perceptions and reasoning for opening the door into natural inclusionality in my personally unique way, using whatever means I have available to me, and invite others across the threshold if they wish*, where I will be pleased to welcome, help and engage with their enquiries as best I can. Whenever I forget to say or admit this, and engage instead with a perceived requirement or actual demand to *convince* others, I sense resentment and resistance rising within my listeners, and can all too easily become defensive and resentful myself. Maybe that continual reminder to 'hold openness' (Fig. 7) is deep in the core of an inclusional educational practice. Maybe this is why the *unsolicited* expression of how students see me shown in Fig. 9 means so much to me. Whether they realized it consciously or not, this simple image instantaneously expresses the natural inclusional nature of individual self-identity as a dynamic inclusion of its local and nonlocal neighbourhood, with darkness in and around all.



Figure 9. 'Rayner Flower'. *How Bath biology students presenting a second year undergraduate seminar about the practice of science portrayed me as an energetic inclusion of darkness*

What May Not Be Obvious

Every body is a cavity at heart

Every figure reconfigures both in science and in art

Every face is interfacing from no bottom to no top
Every faith is interfaith that cannot tell us where to stop
Every lining opens inwards as it brings its inside out
Every curtain closes outwards to conceal its inner doubt
Every story ends in opening from some future into past
Every glory is the story of finding first in last
Every aching is the making of another role for play
Every taking is the slaking of another's thirst to stay
Every tiding's no confiding with-out the trust to tell
Every siding is no hiding from the fear of utter Hell
Every flowing is the ebbing of another's world within
Every glowing is the lighting of the darkness in the spin
Every heartbeat is the murmur in the core of inner space
Every drumbeat is the echo of the dance within each place
Every silence is the gathering of the storm that is to come

When Love comes to Life

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